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Democracy and Capital.

By "A Bureaucrat."

Mr. Faraday has written an interesting and stimulating book. Seldom have the fallacies which underlie the cry for the nationalization or socialization of industry been exposed with more trenchant vigour. (*Democracy and Capital* by W. Barnard Faraday, L.L.B., Barrister-at-Law, London. John Murray, 8 shillings net.) It may be doubted, however, whether an expensive book of this character will be bought and read by any but those who are already convinced of the soundness of the arguments it sets forth. It is not open to doubt that the time has come when those who believe that the capitalist system with all its faults — and it must be admitted at the outset of this review that they are many and grievous — provides the best method of carrying on the world's work must go forth into the by-ways and hedges, in other words, must fight the socialist with his own weapons and must use all the arts of oratorical persuasion to convince those who have been led away by socialist eloquence that they have chosen the wrong path. Mr. Faraday provides them with arms which should prove of the utmost value in the contest. One of its greatest difficulties lies in the fact that no two socialists think alike. A few — a very few — such as Mr. and Mrs. Sidney Webb and Mr. H. G. Wells, have a fairly clear idea of a socialist commonwealth but the rank and file of the socialist party (if such an undisciplined party can be said to have any rank and file!) have the most nebulous notion of what it is they are contending for. All they know is that their leaders have promised them that socialization will bring about the millennium. It is dinned into their ears that under the present system the rich are always growing richer and the poor poorer, that capital is ever being concentrated into fewer and fewer hands. Those

who have watched the break-up of large estates which has proceeded so rapidly during the last few years know how far this is from being the case. Another census of production — and it is high time that one has held for the last was in 1907 — would furnish irrefutable evidence that it is not. Mr. Faraday gives figures based on the census of 1907, the income-tax returns and the customary rates of wages, which show that, in 1911, the average income of the "rich" who then numbered $4\frac{1}{2}$ millions was £154 per head and of the "poor" who numbered 41 millions was £39 per head. In 1905 the rich numbered 4 millions and their average income was £182 per head whilst the poor who numbered 39 millions had an average income of £26 per head. He admits that the recent rise in the cost of living has rendered the increase in the income of the poor largely nugatory but computes that, as the result of the war, the rich are 60 per cent and the poor 25 per cent worse off than they were seven years ago. There is no reason to question the accuracy of this estimate which shows how greatly the relative position of the poor and the rich has changed for the better in recent years. Mr. Faraday proceeds to even more striking figures. By a kind of tacit understanding, the income of a Cabinet Minister, £5000 a year, is regarded as moderate but sufficient. The latest statistics available show that 22,565 persons are in receipt of this or a larger income. Their total income amounts to £290 millions but of this they are already mulcted to the extent of £124 millions in income-tax, leaving a net income of £166 millions. If the whole of this were confiscated, it would make the tremendous difference of one shilling and six pence per head per week to the whole population. If £5,000 a year less tax were allowed to be retained, this

magnificent sum would be reduced to exactly one shilling per head per week. Such would be the result of turning society upside down. Truly the mountain would bring forth a ridiculous mouse.

Granting all this, say the socialists, we still contend that under our scheme for nationalizing or socializing industry, production would be stimulated to such an extent that the national income would be vastly increased. It is perhaps worth while to note in passing the difference between nationalization and socialization. Nationalization means Government ownership and private control, socialization national ownership and national control. Mr. Faraday's arguments hardly perhaps distinguish between the two but he is wise in directing them mainly against the extremist school which sees in socialization the panacea for all ills and which contends that the immensely improved organization and the elimination of wasteful competition that it would bring with it would mean a very much greater output, especially as the workers would feel that their efforts were being directed not to increasing the profits of capital but the good of the State. Competition inside the State socialization would undoubtedly eliminate but competition between State and State it would not unless every nation adopted the new system at the same time and agreed that it should be worked by a Government composed of the super wise men of the earth. To this point we shall revert later. But, even if wasteful competition were eliminated, would waste disappear? Mr. Faraday shows that it would not. Under the system of nationalized production, enough would have to be produced to go round. If it were not, the Government would be asked to explain the reason why and it is certain that no explanation which it could give would be regarded as satisfactory. To be on the safe side, therefore, more than enough to satisfy every possible demand would have to be produced and the margin would be wasted. As to improvement in organization, is there anything in the past record of the State to justify the smallest confidence in its ability to run any industry at a profit even when it has a monopoly and can charge what it likes? The history of telegraphs and telephones, to which has now to be added the post office, is a sufficient answer to the question. The arguments in support of the view that no State-run industry is likely to be even self-supporting are clearly and cogently stated by Mr. Faraday. Particularly good is his picture of the pitfalls which will lie in the path of the

bureaucrat who sets out to purchase raw material. The term "bureaucrat" is used advisedly for it cannot be too often emphasised that the socialization of industry means the transfer of control to a vast bureaucracy. This is cheerfully admitted by Mr. and Mrs. Sidney Webb and their followers who have a sublime faith in the ability of bureaucrats who belong like themselves, to the middle classes to run everything and everybody but it is certainly not realized by the working classes who have all the Englishman's detestation of State control and State interference. As Mr. Faraday points out, bureaucrats are constitutionally incapable of taking the long view. It is their habit of mind "to take the line of least resistance, to concede a demand for increased pay rather than to refuse it, to keep an old machine rather than to install a new one, to extend an office rather than to reduce it, to accept the first tender rather than seek a lower one." In other words, they share the ineradicable tendency of ordinary mortals which is to spare one's self as much trouble as possible if by so doing, no detrimental consequences to one's self are incurred. The attitude towards telephones of the Government which had sunk money in telegraphs and of local authorities who have sunk money in tramways towards motor buses furnish sufficient justification for and comment on Mr. Faraday's contention that a bureaucracy is always in favour of keeping the old machine. One point which must never be forgotten is that, under the capitalist system, mistakes have a way of cancelling out to a very large extent so far as the general public is concerned. That would not be so under the socialistic system. There mistake would be on a colossal scale and would have colossal consequences. It is this possibility which helps to make the bureaucrat timid in his outlook. He might succeed in avoiding the big mistake but his desire to avoid it would not tend to efficiency.

The socialist would put all his eggs into the State basket. He forgets that, whilst the State can afford to run a few branches of activity — posts, telegraphs, telephones or even railways — at a loss, it could not afford to lose on all its industries. If land, railways, mines, transport, the liquor trade, the milk supply, electrical undertakings, shipping, insurance and banks were nationalized or rather socialized, the £100 millions they now contribute in income-tax alone would have to be found. Absolute confiscation is only advocated by the extremists and may be regarded

as out of the question. The lowest price at which purchase could be made may be put at £2,500 millions. Interest on this at 5 per cent would amount to £125 millions. Of this, the Government would get about £40 millions back in income-tax, so that, before they had the smallest margin out of which to improve the conditions of labour, render an improved service to the public or reduce prices, the overhead charges to be met would amount to nearly £200 millions per annum. But, reiterates the socialist, production would be so immensely stimulated under the system I advocate that this would be a small matter. Every one would work his hardest because he would feel that he was working for the good of all. The commonsense man is unable to take this roseate view. He cannot bring himself to believe that human nature would undergo such a radical change. Does the postman whose bags are full at Christmas or the tram conductor whose tram is crowded on a bitterly cold day derive any satisfaction from contemplating the sums which are accruing thereby to the State or the Town Council? We doubt it. The "Government stroke" is proverbial. The truth is that the "State" is far too great an abstraction to the ordinary citizen. The belief, as widely entertained in England as in India, that it has an inexhaustible purse and that it can provide funds for any scheme however costly, shows this. It would not cease to be an abstraction merely because every one was working for it. Few and far between would be the men who laboured any more industriously on that account. The one forty-millionth share of the benefit which would accrue to them therefrom would prove an entirely negligible incentive. Mr. Faraday holds, we believe quite rightly, that labour troubles would be every whit as frequent in the socialist state as they are now, that labour would be every whit as selfish and that there would be exactly the same reluctance on the part of skilled labour to relax the rigidity of its caste rules. The latest school of socialist, the Guild Socialist, recognizes to the full the force of individualism. He admits that socialism in the past has concentrated on distribution to the exclusion of production. His remedy is to place all industrial power in the hands of the workers, to create a class conscious "proletariat" determined to end the wage system, to appropriate the capitalist class and to bring this about by a general strike. "Thus," as Mr. Faraday says, "he will try to cure what he imagines are the evils of distribution by a

cessation of all distribution. He is as bankrupt of any theory of production as any of his predecessors."

Mr. Faraday's description of the effect socialization would have on the foreign exchanges, though excellent, is too lengthy and too technical to be summarized here. But it brings him to a fatal flaw in the socialist argument. Socialism *might* work in a self-contained state though the experiment once made in Paraguay, to which Mr. Faraday does not refer, shows that it is hardly probable that it would. Russia's experience is no more hopeful though it may be argued that it was just because Russia was no longer self-contained but had become so entangled with other states that communist rule has proved so disastrous. Be that as it may, the socialist has never explained how his system would work unless it were adopted by all nations at the same time and how, if it were adopted by a country which, like Great Britain, lives by foreign trade, such a country would fare in competition with nations which preferred to retain the capitalist system. He has some inkling of the necessity for socialism to be international; hence the formation of the First, Second and Third "Internationals" and their offshoots. But he has never faced the difficulty of including the great Eastern nations, India, China and Japan, with their simpler standard of living, in his schemes. Mr. Faraday's quotation of Lassalle's "iron law of wages" is much to the point in this connexion. Lassalle held that "by an iron and inexorable law, under the domination of supply and demand, the average wages of labour remain always reduced to the bare subsistence which, according to the standard of living of a nation, is necessary for maintenance and reproduction." This "iron law" existed nowhere but in Lassalle's fertile imagination but that is not the point which is, as Mr. Faraday says, that the standard of living is considerably higher in some nations than in others and that those nations which are highly industrialized have little to gain from nations at a lower stage of (industrial) development.

Labour has nothing to lose but its chains: such is the slogan the socialist uses in urging on the "proletariat" to war with the capitalist system. The Russian labourer knows that he can also lose his life and that there is no comparison between the capitalist whips from which he once thought he suffered and the socialist scorpions he has now to endure. The slogan is utterly false. The labourer has his labour to dispose of and it is an ele-

mentary principle of political economy that the greater the accumulation of capital, the higher the price he gets for it. Under the socialist system, he would be deprived of every vestige of freedom in regard to its disposal and would be regimented and brigaded from the cradle to the grave. The middle class socialist regards the prospect with composure as he anticipates that it is he who, from a comfortable office chair, will do the regimenting and brigading but we doubt whether the British workingman would consider it all alluring if he were able to realize it in all its implications.

Mr. Faraday is no Pangloss. He does not argue, as did Voltaire's famous philosopher, that all is for the best in the best of all possible worlds. The capitalist system can and must be improved. Some of the expedients he suggests for improving it hardly seem as important as he thinks them. He is a lawyer and one sees the legal bent of mind in such suggestion as the abolition of primogeniture and the amendment of the bankruptcy laws.

But there can be no doubt that he is wholly correct in finding the cause for the spread of socialist doctrines in the sense of insecurity which haunts the workingman throughout his life. We are wholly at one with him in thinking that, if this could be removed, we should hear little more of socialism and it can be removed by giving the workingman a stake and a status in industry. Whether by a vast extension of the co-partnership system or in other ways, he must be transformed into a capitalist, it is for employers and labour leaders to put their heads together to devise means by which this can be brought about. Better education, better information—it is absurd that there should be no trustworthy information regarding national production available from a date later than 1907—must lead up to it. Thus and thus only can Blake's vision of new Jerusalem "in England's green and pleasant land" be realized. The socialist's new Jerusalem is far more likely to resemble Dante's Inferno—or Modern Russia.

Jaggery from the Cocoanut.

A private meeting of the Madras Indian Economic Association was held recently to discuss the Financial Aspects of Prohibition. It was pointed out that, while the prohibition of licensed consumption of alcohol is easy, the effective prohibition of unlicensed consumption would be very difficult and expensive, and the suggestion was made that, in so far as it was considered desirable to supplement persuasive methods of spreading temperance by coercive action, this might be done by owners letting their trees for tapping for jaggery instead of for toddy. Doubts were then expressed whether jaggery ever had been or could be prepared from the juice of the cocoanut palm, and whether such manufacture of jaggery was a possible commercial proposition. On this question the following statement has been received by the Publicity Officer through the Director of Agriculture for Bombay from the Deputy Director of Agriculture for the Konkan Division:—

"With regard to the manufacture of Jaggery from the juice of the cocoanut palm, I have to inform you that this business was practised on a scale in Kanara in the pre-abkari days but died out after the tax for preparing fermented toddy was imposed on cocoanut and tax free tapping for Jaggery purposes was not allowed. Since the last six years after

Government allowed tax free permits for Jaggery making the industry has somewhat revived and we have about a dozen persons granted such licenses in Kanara every year.

"I am studying the detailed methods of peeling with the palm for jaggery-making and its economy as compared to the production of nuts and hope to soon put them together in a publication as a continuation of my studies of palm gul manufacture in the Bombay Presidency.

"We find that good solid jaggery can be made from the sweet juice of the cocoanut palm and one tapper can manage from 10 to 15 trees. The average output of juice and gul per tree as taken from 38 trees comes to 47 gallons and 91 lbs. respectively, the gul fetching a price of Rs. 5-12-0 per tree."

The facts recorded indicate that the cocoanut palm is superior to the date palm as a source of jaggery, and that tapping for jaggery instead of for toddy may well be considered by owners of trees who desire to promote abstinence from consumption of alcohol.

The Belgian Government has placed a large order in British Guiana for greenheart and other timber to be used in harbour and railway works in Belgium.

The Hindu University and its Function.*

By H. H. The Maharaja of Mysore.

Before calling upon the Vice-Chancellor to deliver the Annual Address to this Convocation, I desire to express the great pleasure it gives me to revisit this University after a period of three years. I notice with deep satisfaction the remarkable expansion which the University has undergone in every direction, in teaching staff and organization, in College buildings and hostels, indeed in all the moral, and material resources of a great modern University.

I congratulate the University on the formation of an Officers' Training Corps, the sanction for which was announced by His Excellency the Viceroy in the sympathetic and inspiring speech which he made here a few days ago. I feel that we may rest assured that our University will find in him a true friend and well-wisher.

The historic ceremony which you witnessed yesterday marks, as it were, the admission of the University of Benares to the franchise of the Commonwealth of Learning, and the recognition of her claims to be the spokesman of a whole people's cultural tradition. Her new responsibility demands that the University should make a searching examination of her programme, her resources to work out that programme, and her present situation in the Indian academic world. Such an enquiry may immensely strengthen the position of the University. It may bring increased financial support from the public, by reviving zeal and confidence, and rousing the imagination of the country at a time of greater distraction, doubt and difficulty.

The situation to-day may be described as follows: the movement for residential teaching Universities has entered on a new phase in this country. The day of the smaller University is come and some of the larger centralized Universities may even break up into more local institutions for the purposes of what may be termed an intensive culture. In the United Provinces, for example, there will be four or even more Universities, besides one or two Technological Institutes, which will carry on Chemical and Industrial research of an advanced character.

This University is a novel experiment in educational reconstruction. It seeks to con-

serve the vital and essential elements of Hindu learning and civilization, to adapt them to modern conditions and to make such enduring contributions to the solution of the world's problems and difficulties as India is fitted to make by her long experience and history.

The time has now come to ask how the Hindu University is equipping herself for her special mission. A clear vision of the Genius of India, of the soul of the people, must be her inspiration. Has the University gathered, at this historic centre, a band of teachers, preceptors, acharyas, and provided herself with the most up-to-date machinery in order to turn out nothing higher than the standardized B.A.'s and M.A.'s of the approved pattern? The answer is surely "No." True, there is the Oriental Department, and even a College of Theology, but what we must ask ourselves is how far our regular curricula and schemes of examination and the ideals of personal and social relationships, which the students of this University imbibe from the atmosphere of its halls and hostels, will foster and enliven all that is totally inspiring in the Indian outlook upon life. Nor must a Hindu University, in its Oriental Department, forget at the present day to welcome into the bosom of the Indian family the Buddhist Pali and the Jaina Prakrit literature. Benares must also endeavour to build up Indian schools of Tibetan, Chinese and Central Asian languages, which may serve to recover the vanished treasures of ancient and mediæval India. This is a pious duty which Benares cannot neglect.

Equally insistent is another factor that struggle for existence, that challenge of the modern world which a Hindu University must face, and face with sincerity and courage. The University has begun, and begun wisely with Faculties in Mechanical and Electrical Engineering, for, after all, industrial power, by which I mean not only machinery but also cheap hand-power, is essential to the rebuilding of a sane and healthy life for the Indian people to-day. But we must not forget the masses in our Indian villages living by agriculture; the village of the soil, no less than the cultivation of mental and moral resources, must be given a prominent place

* Speech made at the opening of the Convocation of the Hindu University, Benares, Dec. 1921.

in the organization of a Hindu University reflecting the form and impress of Indian life and surroundings. The Agricultural Department will not, therefore, come a day too soon.

A Hindu University must prove itself equal to one more crucial test. The foundations of the old order, like the very foundations of the deep, are being broken up to-day, all over the world. Revolutionary doctrines, economic, social, political, educational, are being spread everywhere under a hundred different guises and names, and under a hundred banners. Everywhere there is spreading an undercurrent of revolt against order, progress, and reform. The old hope and faith, the old wisdom and charity, are being forsaken and forsworn. This is the great agony to-day, the agony of the world. It is for Hindu Culture to try and root out the seeds of disorder. It was here at Benares that the Buddha preached his first sermon and set in motion the wheel of the Perfect Law. Here Shankaracharya, Ramanuja, Kabir, brought deliverance to mankind in new and untried ways. India, the land which has preached and practised ahimsa, the land which has through the ages meditated on Maitri and uttered the great benediction Shanti, has India no message to the world? May we not look to the graduates of this University to go out into the world of humanity to endeavour by precept and example to raise the standard of morality and good citizenship?

Such are some of the problems which confront a Hindu University at Benares, and they cannot be solved without careful thought and deliberation. But if our University is to achieve anything in this direction it is imperative that her finances should be placed on sound basis. Without this, nothing great or durable can be done or even attempted. If the University is setting out on a great campaign, she must have not only money, the indispensable sinews of war, she must also husband her resources and beware of speculative schemes and barren or illusory projects.

Our urgent need of more funds has been and is being pressed forward in a campaign that knows no flagging and no reverse or retreat, thanks to the flaming zeal and persuasive eloquence of Pandit Madan Mohan Malaviya, who has indeed been the life and soul of this University ever since its inception, and has rendered invaluable service as its Vice-Chancellor. Equally important with the quest of money are the upholding of a pure ideal of the Sanathana Dharma, the core and

essence of Hindu Culture, and the wide dissemination of right ideas to the meaning and substance of that Dharma. Indeed, there can be no true Hindu University without such a movement of illumination, purification and revival. In this cause signal service has been rendered to this University, and to the promotion of constructive national education, which it represents by Mrs. Annie Besant, the founder of the Central Hindu College, and by the Maharaja of Darbhanga, one of our most munificent benefactors, and it is only right and proper that this University should express its grateful appreciation of their great services by conferring on them its highest degree, *honoris causa*.

Our Hindu University cannot survive unless she contributes to the reconstruction of life and social order in the India of to-day, she must quicken what is inert, illumine what is dark, rejuvenate what is old and withered. And even as the Eternal city, in which she has her home, is to the pious Hindu the meeting-place of the Earth and Heaven, so must the University of Benares stand as the Bridge between Past and Present, between Old and New, and, with the Holy River at her side, link the India of the Vedic times with the India of the morrow that is to be.

Mauritius Sugar.

LOCAL MANUFACTURE OF MACHINERY.

The last report of the Department of Agriculture dealing with the Mauritius sugar industry gives a favourable account of the progress achieved during the past year and of the prospects ahead. "Very considerable improvements," writes the Director, "have been introduced into a number of factories during the past year; improvements introduced have comprised machinery imported from England, France, and America, and also machinery manufactured at the local foundries."

The manufacture of machinery in the local engineering workshops, which are superintended by Mauritian engineers trained in the United Kingdom, marks a great advance in the industrial history of the Colony. Not only are these workshops now able to supply many of the requirements of the island's factory owners, but they have also met many important orders for sugar-cane machinery from the islands of Réunion and Madagascar.

"The determination shown by sugar manufacturers," says the report, "to invest a reasonable proportion of the profits consequent upon the high prices in improving factory installations is a satisfactory feature of the present position. Further large orders for machinery are now being placed by almost all factories, and the coming year will witness a marked further advance in respect of the standard equipment of the average Mauritian factory."

World's Monetary Problems.

In our last issue we published Professor Cassel's "Second Memorandum on the World's Monetary Problems". As in his first memorandum the Professor gives a profoundly interesting and elaborate analysis of the actual nature of the currency difficulties with which the entire commercial world is now confronted, and of the effects of these difficulties on production and trade, and in conclusion suggests the lines along which a solution must be sought.

He maintains that the great break in prices that has taken place in the United States, the United Kingdom and some other European countries, has been the result of a deliberate policy, initiated and enforced by governments, employing as instruments to this end restricted credit and a high Bank Rate. It may be granted that the governments concerned certainly arrested by these means the continuous rise of prices which culminated in the late spring of 1920, and started that deflation in prices which has proceeded almost uninterruptedly ever since; but it appears that the movement, once started, passed altogether out of control of any deliberate policy, and proceeded to lengths, and produced consequences beyond what were ever anticipated or desired. Professor Cassel himself seems to endorse this view when he now implies, though with the cautious reservation that the doctrine is a dangerous one, that a certain inflation may now be called for. The principle underlying this suggestion, which runs through the whole memorandum, is that price levels in themselves are of no moment whatsoever, but that stability of price levels in two countries is an essential condition of successful and profitable trade between those countries. Hence, if a policy of restriction of credit too stringently applied has produced a dangerously excessive fall in prices, it may become desirable, or even necessary, to check the fall by a deliberate creation of credit, and consequent inflation of prices. Whether deliberate or not, there are indications that this process is already beginning both in the United States and in this country.

The memorandum analyses at some length the present position of the gold question, and the possibility of the restoration of a gold standard in the principal European countries. The almost insurmountable difficulties that stand in the way of a resumption of gold payments by European countries, even on the basis of a written-down gold content of the

unit of value, is emphasised, and Professor Cassel appears to adopt the view that it is possible to stabilize price levels as measured in paper money by means of an appropriate and regulated expansion or restriction of credit, and that this stabilization is an essential preliminary to the restoration of gold payments. If this view is correct, it would seem that he is of opinion that the ultimate linking of European currencies to gold may after all prove not only unnecessary but even undesirable. It seems clear, in fact, that to-day not even in the United States does any such thing as a real gold price exist, *i.e.*, a commodity price related to and determined by the cost of production of gold. Unless this were true, it is clearly impossible for commodity prices in the United States to have fallen from the level of 272 in May 1920 to 152 in August 1921, without any corresponding increase in the actual cost of gold production.

Stress is laid upon the fact that the existence of international indebtedness and in particular of German indebtedness on reparations account is a serious obstacle to the restoration of stability. As a result of an analysis of the "almost insurmountable difficulties of the problem of the international indebtedness created by the war," Professor Cassel arrives at the definite conclusion that some reduction of this debt must take place. The moderation of the language in terms of which this conclusion is stated is probably intentional. It is not, however, going too far to say that the whole tenor of this part of the memorandum points to the conclusion not definitely stated in so many words, that real stability of price level and a consequent restoration of international trade can be most speedily and advantageously secured by wiping out all international indebtedness arising from the war.

While the first memorandum pointed out the evils of inflation, the second, in view of the radically altered situation, urges discontinuance of violent deflation and elimination of all excessive price movements. Deflation is defined as the process by which the internal value of the monetary unit is increased. Owing to the deflationary policy of the United States efforts to raise the values of other currencies have not only not succeeded but have left the relative position worse than before. Thus the instability and uncertainty of monetary conditions are just as great as they were a

year ago. But it should be noted that the fall in the general level of prices has not been followed by a corresponding reduction in the means of payment. Moreover, as wholesale prices have fallen to an unnatural level by forced sales of stocks, index-numbers of wholesale prices exaggerate the fall in general prices, so that a decrease in the stock of money smaller than is warranted by the index-numbers need cause no surprise.

Reduction in the nominal purchasing power of the public may be effected either by restriction of credit, or by applying surplus revenue to cancellation of the means of payment. In addition to the deterrent effect of such a policy upon industrial enterprise, international trade is also affected. Sharp movements and changes in the internal value of currency react upon foreign trade in that while the producer does not lose by the fact that the exchange value of the foreign currency has decreased, for this is compensated by the higher purchasing power of his own currency, yet he suffers by having to repay debts incurred when money had a less purchasing power. Moreover, inflation in certain countries and protectionist measures increase the dislocation of exchanges. As the real burden of the public debt has in many countries been increased by the enhanced value of money, further deflation will result in bankruptcy, the only remedy being a fall in the value of money.

Professor Cassel points out that it is erroneous to regard any level of prices as abnormal, provided that the level is fairly constant. Thus the desire to restore the old rates of exchange, to keep pace with a country which is deflating, or to restore the old gold standard, should have little weight against the benefits to be obtained by stabilization. Deflation only causes further instability. Moreover, a high level of internal prices is not in itself a handicap to foreign trade. When exchanges have adjusted themselves to the purchasing power parity of the money of the country, export and import trade are normal as far as monetary conditions are concerned.

The policy and position of the United States are now the determining factor in the gold question. Not only is that country the creditor of the world, but gold has flowed there because its value in terms of commodities is greater and because America is the only free market for gold. This relatively high value has only been made possible by deflation. The normal pre-war process, which would have prevented undue disturbance of price levels

in the United States, does not now function, first because foreign countries regulate export of gold, and, secondly, because the gold which has entered the United States has not increased the total of the monetary purchasing power. It has neither been put into circulation nor made the basis of extended credits.

The protectionist policy of the United States makes the question still more difficult. Commodities must be taken in payment of debts, and the new position of the United States as a creditor country seems to involve the necessity of a radical change in the traditional balance of trade. This necessity might be avoided to some extent by investment in foreign securities. Although a new period of inflation in the United States might enable some European countries to resume gold payments to that country, yet a secure gold standard is only possible if there are free movements of gold in a world-wide market and balances are settled without much recourse to this gold market.

In Europe, no stability in the system of international payments can be expected while the disturbing factors of reparations and inter-Allied war debts exist. As regards resumption of gold payments the only European country in a position to do so independently of others is Great Britain, but the debt to the United States is a serious obstacle to the re-establishment of a free gold market in London.

If the disturbing elements arising from the existence of international debts were eliminated resumption of gold payments would be possible in the case of countries in which the value of money in terms of commodities is stable. The parity with gold would be determined in the case of any such country by the relation between the value of its money and the value of gold. To counteract the effects of competition for gold the different countries must come to an understanding tending towards a reduction of their monetary demand for gold, and as the production of gold is insufficient, the only alternative is to use a different monetary standard.

The first requisite in a restoration of some form of gold standard is a stable internal value in each currency. And while it is impossible altogether to avoid price fluctuations, Professor Cassel suggests that in a period of rising prices, increased credits and means of payment, interest should be high and credit restricted. Conversely, in a period of falling prices, inflation is the right policy. The relation of wholesale prices to cost of production

determines the policy to be pursued, and the level at which prices are to be stabilized is chosen so that the least possible disturbance is caused.

One of the main obstacles to world recovery is the German indemnity. The doubt as to Germany's ability to pay, the disorganization caused by excessive sale of marks abroad, with the consequent dual value of the mark, and speculation, have created a feeling of insecurity. The stipulation for payment in gold and the fear lest Reparation Bonds will be placed upon the market are other disturbing factors in the situation. Finally, there is the reluctance to receive German goods and, as a result, protection against their import is sought by the imposition of tariffs. Similar elements of uncertainty are

involved in the question of other abnormal international debts.

In summing up, Professor Cassel says that this indebtedness should be settled on terms that satisfy the world that the debts can really be paid and make it clear by what means payment can be made. When such settlement has been made the way is clear for a discussion of the monetary problem, especially as regards the stabilization of the internal value of currency and the gold question. In the midst of deflation on the one hand and inflation on the other, with the consequent lack of stability in the exchanges and the purchasing power of money, guidance should be sought from a small committee of experts, representing, not nationality, but knowledge and experience.

Talking Lighthouses.

If all that is claimed for a new invention by which speech and action are synchronized the lighthouse of the future will cease to be a lighthouse only. After all, the purpose of the lighthouse is to shell its beams across the ocean in darkness to tell the mariner his location. The new invention, it is claimed, will give speech to lighthouses, so that they may shout their names over sixty miles out to sea. Details are lacking of the invention, but the cinema industry awaits with interest definite particulars.

Of course, the talking picture, although not common, is by no means new. Years ago the anamatphone, the vivaphone, and the pathphone were invented, and later a speaking picture was introduced by Messrs. Gaumont. It was then realized that the only way to obtain perfect synchronizations of the film, with speech was by light rays. The Swedish inventor claims to have done this and, having done so for the cinema, it is claimed that the rays of light in the lighthouse could also be used to give verbal notice to navigators in addition to the silent message of the light.

British opinion of the new idea is interesting.

Sir William Bragg, Professor of Physics, says:—"Much work has been done in connection with the synchronization of speech and action, but whether the latest invention is more successful than others have been it is, of course, impossible for me to say at this early stage. During the war Professor Rankin and I worked on the relation of light and sound, and we met with a considerable degree of success."

Professor A. L. Rankin, of the Imperial College, says:—

"It is quite possible to make a film which will speak by means of light rays. The idea is not new. During the war Sir William Bragg and I spoke directly, and not on to a film, by means of light rays. Our invention worked very well, but was not adopted by the Government. We were able to telephone a distance of one and a half miles by means of light rays. The production of a talking film by light rays is theoretically quite possible and it is only a matter of carrying out the necessary experiments to make it perfect. There are many ways in which it can be done.

"Selenium would have to be employed because that is a substance which conducts electricity better than illuminated than when it is dark. The light rays shine through the different degrees of opaqueness of the film and mark it to the required density."

Mr. Will Day, who has made a study of the matter for years, says:—"I know nothing of the new invention, but it is a possibility, the modulation of light rays affects a selenium drum, which is the more sensitive to the least variation of heat or light, and expands or contracts according to the variations of light rays impinging upon it.

"I do not think, however, that even selenium is sensitive enough for the purpose."

Detroit has voted \$18,000,000 for work-study-play-school buildings,

Review of the Trade of India in 1920-21.

A report just published by the Department of Statistics, India, reviews the trade and the industrial position of this country. The Review points out that the year 1920-21 carried Indian trade one more stage on its slow return to normal conditions. The previous year had witnessed an unprecedented boom when Indian exports increased monthly from Rs. 22½ crores in April, 1919, to the record figure of Rs. 31½ crores in March, 1920. Imports had also increased during the same months from nearly Rs. 14½ to nearly Rs. 24 crores. The total trade of that year, imports and exports combined, had reached the record value of Rs. 535 crores. The pace was too fast, however, and before the year 1919-20 had closed, it had given the first clear indications that the inevitable reaction was at hand. By January, 1920, freights had definitely fallen; tonnage was no longer scarce and a further decline in freights was confidently expected. Freight charges are an important item in the landed cost of produce, and neither dealers nor manufacturers can afford to buy on a falling market save for urgent requirements. A natural consequence was that forward orders on India diminished, and subsequent business was largely confined to spot transactions. In February, a check to the rising prices of one or two commodities indicated that stocks of those goods in the world's markets (where exchange and political conditions permitted of import business) were approaching satiety levels. A third factor was the downward trend of exchange. The demand in the United Kingdom for council drafts ceased early in January and the attempt to stabilize the rupee at 2s. gold led to violent competition in India for reverse councils. T. T. selling rates on London, which had stood at 2s. 10½d. on the 11th February 1920, had fallen to 2s. 3d. by the middle of the following month. Taxation was everywhere high, and financial stringency prevailed, foreign exchanges were capricious and unrest was beginning seriously to affect the world's industries. Russia and Central Europe were still out of the market, and India had lost in them some of her principal customers. Finally, owing to poor harvests in India it was impossible wholly to remove embargoes on the export of foodgrains, and one of the incidents to a favourable trade balance was in consequence curtailed.

Exports were first affected. As already stated, exports during March, 1920, had reached the record figure of Rs. 31½ crores. By the following month, April, they had fallen to Rs. 28½ crores, by September to less than Rs. 22 crores and by March, 1921, to Rs. 18 crores. On the import side, the effects of the slump were much slower in their operation, and although their influence was felt in restricted sales and congested warehouses, it was concealed under a steady inflow of goods. Indeed, during the first three quarters of the year imports increased considerably in value, carried onwards and upwards by the momentum of the trade boom and high exchange rates of the previous year. This was only to be expected. Trade returns of imports are invariably out of date as a record of business transactions, for even in normal years they indicate values on arrival in fulfilment of orders placed three, six or even (in the case of machinery) twelve months earlier; as contrasted with the departure values recorded in the export returns, which reflect more quickly serious fluctuations of trade. The contrast is, of course, considerably more pronounced, if, as in the year under review, the orders were placed abroad when demand was keen, industries at high pressure, and deliveries seriously delayed. Moreover the industrial boom in India had encouraged the placing of heavy orders for plant, machinery and stores; and large quantities of railway stores were needed to make good the deterioration of the previous five years. Hence, imports into India increased monthly from over Rs. 21½ crores in April, 1920, to the record figure of over Rs. 31 4/5 crores in October. The orders for these goods must have been placed at anything from six to twelve months earlier; indeed mill-work and machinery was delivered in India in 1920 in fulfilment of orders placed in 1917 or even in 1916. Nor should it be forgotten that the goods arrived in satisfaction of the colossal credits accruing to India on her record exports of Rs. 327 crores during 1919-20. From January, 1921, imports also declined, until they stood at Rs. 24½ crores for March, the concluding month of the year.

Thus the year 1920-21, which had apparently opened well, closed in a state of serious depression. In all the circumstances, failures of individual firms have been surprisingly few — additional evidence of resources built

up during the war. Although exchange is low and fluctuating, it has survived the debacle of Continental exchanges. The internal currency position is good and the note issue well supported. It is true that labour difficulties are in evidence in India as in other parts of the world and that railway facilities which vitally affect the coal position are handicapped by many years' depreciation, without replacement (much less normal expansion), of rolling stock and permanent way. These are factors which must affect industrial activity in India and thus indirectly the volume of her imports and exports. At the same time, they were not sufficient to discourage foreign purchasers during the trade boom of 1919-20, and not even the pessimist can regard them as permanent obstacles to a revival of trade. Much will depend on the activity and distribution of the monsoon. Continental countries, popularly adjudged bankrupt, have already begun to purchase Indian goods in small quantities without the help of International Credit Schemes, and their stocks are known to be below. India herself still has leeway to make up in productive capital expenditure on plant, machinery and railway materials. The revival of trade may be slow, but the conditions essential to a revival are in evidence.

IMPORTS.

The demand for imported goods in India was starved during the artificial trade conditions of the war. During 1918-19 there was a recovery, but only a partial recovery, as war conditions were fully operative during eight months of that year, while the remaining four months were not sufficient to cover more than the preliminary steps towards decontrol and towards return to peace conditions of manufacture. In the result, imports, in spite of high prices, did not attain even the values of 1913-14. During 1919-20 the recovery was more marked, and a total of nearly Rs. 208 crores of imports was reached. The theorist would say that satiety point had been reached. But if 1919-20 was a record year for imports, it was no less so for exports, and the balance in India's favour, on the year's exchange of merchandise, was as high as Rs. 119 crores. Exchange was high, credits were good, foreign prices were still rising. It is true local stocks were also rising, but it must not be forgotten that, in important lines, such as piece-goods, dyes, sugar, provisions and mineral oils, India is accustomed to work on ample margins, which have been roughly estimated at nine and in some cases as much as twelve months'

supplies. When one compares India's purchasing power in 1919-20 with that of 1913-14, and discounts the rising prices of the post-war year, one is not surprised either at the volume of her imports during 1919-20 or at the continuance of her purchases on an increasing scale well into 1920-21. It is true that, at the time of writing, there are indications of a glut. But the indications seem to come more from scattered centres of distribution than from the ample districts which they feed and which furnish collectively during seasons of plenty the vast demands of India. Last year's monsoon was poor, and the district demands were limited in consequence. Were these demands released, it would perhaps be found that the glut is more apparent than real. To what extent foreign purchases will be curtailed as a result of the increase in the general rate of import duty from $7\frac{1}{2}$ to 11 per cent from 1st March, 1921, still remains to be seen.

EXPORTS.

The combined trade of the year 1919-20, imports, exports and re-exports, had amounted to Rs. 534 $\frac{3}{4}$ crores, a total never before attained. Exports and re-exports had together reached a total value of Rs. 326 $\frac{3}{4}$ crores, also a record for one year. Including movements of bullion, official remittance and rupee paper on private account, there had been a record balance of trade of Rs. 95 crores in India's favour. Finally, the last month of that year, March 1920, had registered a new record in the value of one month's exports of Indian merchandise which had totalled Rs. 30 crores.

The volume of exports declined steadily from that month to Rs. 27 crores in April, 1920, the first month of the year under review, Rs. 20 $\frac{1}{2}$ crores in September and Rs. 17 crores in March, 1921. Total exports for the year at Rs. 238 crores were less even than during the last pre-war year (1913-14, Rs. 244 crores) in spite of the higher level of prices. The reasons are not far to seek. The general cost of living, wages and costs of production rose, reducing margins of profit. The monsoon was short and official control of the export of foodgrains, a considerable item in India's foreign trade, had to be retained. Foreign countries in a position to buy had bought to excess and countries starved of goods had not sufficient exchange strength to place orders. Such orders as were forthcoming contracted from a forward to a spot basis. Stocks in India rose. The slump was general and acute.

The slump itself was of course a natural and not unhealthy reaction from the frenzied buying which had followed the redistribution of wealth during the war, and the subsequent reorganization of industries in the comparative security of peace conditions. Indian produce and manufactures had been in keen demand, but it yet remains to be seen to what extent they had passed into consumption or had merely accumulated in foreign markets. The conditions naturally varied with the commodity. All that can be said with safety is that the climax occurred during January-February 1920, when prices and exchange reached their highest levels, and that foreign orders diminished rapidly thereafter. Subsequent purchases were made from hand to mouth, on falling prices, freights and exchange, and behind stocks which could only be liquidated at a loss. An important factor was the weakness of the monsoon of 1920, necessitating the retention of official control of exports of wheat and rice within specified limits of quantity and price. The exports of other food-grains and flour were also kept under control. The practical effect of these orders was to restrict foreign dealings in what are normally important items of India's export trade, and to keep the prices at levels reasonable to both producer and consumer in India.

A factor of considerable importance to the export trade was the steady decline in the sterling value of the rupee from 2s. 4d. on the 1st April, 1920, to 1s. 3 11/16d. on the 31st March, 1921; that is to say, conversely, the appreciation of the rupee value of sterling from approximately Rs. 8-9-0 to approximately Rs. 15 per £. The effect of this tendency was naturally to modify the decline in rupee prices, which did not in general show so violent a fall in India as the corresponding rates expressed, in foreign currency, in foreign markets. The decline in freight rates was a contributing factor. The effect on India's export trade varied considerably with the commodities handled and specially with the conditions of payment. On the whole, although Indian prices declined more gradually (owing to declining exchange) than prices in foreign markets, her export trade was severely hit, since steady forward business had been rendered impracticable.

An interesting feature of the year's trade is that the wide margins of price between superior and inferior qualities of the same classes of goods—characteristic of the war period—were generally maintained. This

tendency was due to several causes. In the first place, Central Europe and Russia have always afforded safe markets for the lower grades of Indian goods; hides and skins, jute, tea and rice may be quoted as instances. With these markets closed, the cheaper qualities of goods were in poor demand and their prices fell accordingly. Secondly, demands during the war were largely on munitions account; and for military purposes the better classes of goods commanded a premium. Thirdly, as freight rates rose during the war, they counted for more and more of the price of landed goods and discouraged the demand for cheap qualities. There are signs that the margins between some classes of goods are beginning to contract again—an indication of a return to normal trade conditions. But, so long as freights and costs of production remain high in comparison with pre-war levels, the discrepancy between the prices of superior and inferior grades of similar commodities will doubtless continue to be wide.

THE DIRECTION OF TRADE.

The noteworthy feature in the direction of India's trade in 1920-21 was an increase in the share of the British Empire in the total trade as compared with the preceding year, from 51 to 56 per cent, with a corresponding decrease in the share of foreign countries from 49 to 44 per cent. The important variations as compared with 1919-20 are stated below:—

(1) A remarkable increase in the percentage share of the United Kingdom in imports from 50·5 to 61 per cent accompanied by a decrease in exports from 29·6 to 21·9 per cent, resulting in a net increase in the total trade from 37·7 to 44·1 per cent. In the pre-war year 1913-14 the shares were 64 per cent in imports, 24 per cent in exports and 40·7 per cent in the total trade.

(2) A decrease in the share of His Majesty's Dominions and other British possessions in imports from 10 to 5 per cent with an increase in their share in the export trade from 14 to 21 per cent, the net result being a decrease in the total trade from 13 to 12 per cent.

(3) The whole British Empire had 56 per cent of the total trade (66 per cent of the imports and 43 per cent of the exports) as against 51 per cent (61 per cent of the imports and 44 per cent of the exports) in 1919-20.

(4) A decrease in the share of the United States of America in imports from 12·1 to

10·5 per cent, although in exports her position remained practically unchanged, namely, nearly 15 per cent, thus recording a net decrease in the total trade from 13·8 to 12·4 per cent.

(5) An all-round decrease in Japan's share in the trade, namely, under imports from 9·2 to 7·9 per cent and under exports from 14·3 to 9·5 per cent, resulting in a net decrease in her share in the total trade from 12·3 to 8·6 per cent.

FRONTIER TRADE.

The bulk of India's foreign trade is sea-borne, and the value of the trade across the land frontier of British India which extends over about 6,800 miles, is only 5 per cent of the total sea-borne trade and amounted to Rs. 34 crores in 1920-21, showing an increase over 1919-20 of 3 per cent and 79 per cent over the pre-war average. The following table shows separately the figures of merchandise and treasure included in this trade:—

	MERCHANDISE.			TREASURE.		
	Im-ports	Ex-ports	Total	Im-ports	Ex-ports	Total
	Rs. (Lakhs)	Rs. (Lakhs)	Rs. (Lakhs)	Rs. (Lakhs)	Rs. (Lakhs)	Rs. (Lakhs)
Pre-war average.	9,17	7,66	16,83	1,14	93	2,07
Year 1919-20.	14,85	15,27	30,12	2,17	65	2,82
1920-21	16,02	15,19	31,21	2,14	62	2,76

The figures of treasure exclude Russian paper money, of which there was practically no import from Chinese Turkistan, while the exports to Chinese Turkistan and Central Asia amounted to Rs. 2,39,000 during the year.

GOLD AND SILVER (COIN AND BULLION).

The special features of the year were (1) the passing of Act XXXVI of 1920 prescribing the new ratio of one sovereign equal to Rs. 10 at which the sovereign was made legal tender, and (2) the removal of the restrictions on the importation of gold coin and bullion by Finance Department Notifications Nos. 1801-F., dated the 20th June, 1920, and 2034-F., dated the 13th July, 1920, and on the exportation of silver coin and bullion by Commerce Department Notification No. 3639, dated the 3rd July, 1920. A change was introduced from the 1st April, 1920, in the system of valuation of imports and exports

of gold for statistical purposes, the market value at the time, and Indian port, of import or export, being adopted for the trade returns.

GOLD.

The sales of gold by the Government of India, which were begun in September, 1919, with a view to reduce the premium on gold in this country and facilitate the establishment of the ratio of Rs. 10 to the sovereign, were continued fortnightly until September, 1920. Under the influence of these auctions the price of country bar gold in the Bombay Bazar stood at Rs. 24 per tola on the 7th April, 1920; at Rs. 21-6 on the 7th July, 1920; and at Rs. 23-8 on 14th September, 1920, the last day of the auction sales. From that date Bombay Bazar prices grew gradually firmer and finished at Rs. 30 on the 31st March, 1921. The imports of gold on private account amounted to Rs. 1,251 lakhs as against Rs. 1,097 lakhs in the preceding year. The United Kingdom sent Rs. 613 lakhs (49 per cent of the total) mainly in the form of bullion as in the previous year, while Rs. 235 lakhs (19 per cent), consisting chiefly of coins were imported from Asiatic Turkey (including Mesopotamia). The other principal exporting countries were Aden (Rs. 92 lakhs), East Africa including Zanzibar and Pemba (Rs. 66 lakhs), the Straits Settlements (Rs. 63 lakhs), Australia (Rs. 60 lakhs), and the United States (Rs. 47 lakhs). There was a remarkable increase in the exports on private account, which amounted to Rs. 2,139 lakhs as against Rs. 693 lakhs in 1919-20 and Rs. 490 lakhs in the pre-war year 1913-14. Japan took Rs. 1,257 lakhs or 59 per cent and the United States Rs. 858 lakhs or 40 per cent of the total. There was thus a net export on private account of Rs. 888 lakhs in 1920-21 as against net imports of Rs. 404 lakhs in 1919-20 and of Rs. 2,332 lakhs in the pre-war year. The imports and exports in the year under review, unlike those of the preceding years, did not include any transactions on behalf of the Bank of England. The imports of gold on Government account were valued at Rs. 1,106 lakhs as against Rs. 3,728 lakhs in the preceding year and only Rs. 27,000 the average imports in the pre-war quinquennium. Ninety-four per cent of the Government imports in 1920-21 (Rs. 1,011 lakhs) came from the United Kingdom, and the remainder chiefly from Aden (Rs. 57 lakhs), Australia and New Zealand (Rs. 6 lakhs), and Asiatic Turkey (Rs. 2 lakhs). The Government exports

(mainly to the Bahrein Islands) were valued at only Rs. 7 lakhs as against Rs. 599 lakhs in the preceding year. The net imports on private and Government account were only Rs. 2 crores as against Rs. 35 crores in 1919-20 and over Rs. 23 crores in the pre-war year. The absorption of gold coin and bullion in 1920-21, was Rs. 2,521 lakhs against Rs. 1,777 lakhs in the preceding year. Large amounts were however held for export as soon as exchange, price and other conditions allowed a profit.

SILVER.

The price of bar silver per ounce in London on the 1st April, 1920, was 72½*d.* It fell to 41*d.* on the 15th June, 1920, and then showed a marked upward tendency rising to 63¾*d.* on the 20th August. Towards the end of August and in September the price remained fairly steady in the neighbourhood of 60*d.* From October the price began again to fall until the lowest figure 30½*d.* was reached on the 5th March, 1921. On March 31, the price was 33½*d.* There was a noteworthy increase in the imports and exports of silver on private account accompanied by a decrease in the imports on account of Government. The imports on private account rose from a little over half a million ounces worth Rs. 15 lakhs in 1919-20 to nearly 42 million ounces, valued at Rs. 1,073 lakhs, in the year under review. The principal sources of supply were the United Kingdom (Rs. 699 lakhs), China (Rs. 175 lakhs), and the United States (Rs. 50 lakhs). The Government imports were only Rs. 29 lakhs as compared with Rs. 30 crores in 1919-20. The latter figure, however, included certain shipments from the United States under the Pittman Act, as noted in the preceding issue of the Review of Trade. The exports of silver on private account increased from Rs. 59 lakhs to Rs. 441 lakhs and went mainly to Mauritius, China, and the Straits Settlements (chiefly Straits Dollars and other coin on account of the Straits Government).

Thirty lakhs worth of silver in Government of India Rupees were exported on Government account and were entirely destined for Ceylon. The net import into India, both on private and Government account, in 1920-21 was Rs. 631 lakhs, a decrease of 78 per cent as compared with the preceding year and of 52 per cent as compared with 1913-14.

BALANCE OF TRADE.

The outstanding feature of the year's trade was the excess of imports over exports of

private merchandise by over Rs. 79 crores. In the preceding year exports had exceeded imports in value by Rs. 126 crores and in 1918-19 by nearly Rs. 85 crores. In the first two months of the year under review exports held their own, but imports were fast gaining on them and the favourable margin of Rs. 7 crores in April, 1920, was reduced to Rs. 4 crores in May, and was converted to an adverse balance of Rs. 3 crores in June. From that month the adverse balance continued to the end of the year, the highest figures recorded being Rs. 13 crores in November, 1920, Rs. 12 crores in December, 1920, and again Rs. 13 crores in January, 1921.

Another feature of the year was a net export of treasure on private account, valued at Rs. 1½ crores as against a net import of Rs. 11 crores in 1919-20 and of Rs. 29½ crores in the pre-war year.

The net result, on private transactions in merchandise, bullion, Government securities, and Council drafts, was that the balance of trade, which had been in favour of India since the outbreak of war, swung against India to the tune of no less than Rs. 50 crores during the year under review.

To summarise the position, prices had reached their apex in February, 1920, and declined thereafter. In particular the London price of silver had fallen from 72½*d.* on 1st April, 1920, to 33½*d.* on 31st March, 1921. Exports of merchandise during the year showed a fall of 22 per cent as compared with 1919-20, while imports rose by no less than 67 per cent. No Council drafts were paid in India, while reverse drafts paid in London amounted to Rs. 28½ crores. Notwithstanding a net export of treasure as against the customary net imports of previous year's trade ended, as already stated, in an unprecedented balance of Rs. 50 crores against India as compared with favourable balances of Rs. 95 crores in 1919-20, and Rs. 35 crores, the average of the five war years 1914-15 to 1918-19.

In these straits, exchange had no option but to decline, in sympathy with the general causes underlying the downward tendency of trade. On the 1st April, 1920, the rate for demand bills was 2*s.* 4½*d.* By the end of June it had fallen to 1*s.* 8½*d.* but rose again to 1*s.* 11½*d.* in July. In August and September it fluctuated between 1*s.* 10½*d.* and 1*s.* 9½*d.* From October it began to fall steadily, and on the 7th March, 1921, stood at 1*s.* 2 15/16*d.* On the 31st March demand bills were quoted at 1*s.* 3¾*d.*

Organic Chemistry.*

By M. O. Forster, D.Sc., F.R.S.

Many and various are the reasons which have been urged, at different periods of its history, for stimulating the study of chemistry. In recent years these have been either defensive or frankly utilitarian, in the latter feature recalling the less philosophic aspects of alchemy; moreover, it is to be feared that a substantial proportion of those who have lately hastened to prepare themselves for a chemical career have been actuated by this inducement. It is the duty, therefore, of those who speak with any degree of experience to declare that the only motive for pursuing chemistry which promises anything but profound disappointment is an affection for the subject sufficiently absorbing to displace the attraction of other pursuits. Even to the young chemist who embarks under this inspiration the prospect of success as recognized by the world is indeed slender, but, as his knowledge grows and the consequent appreciation of our ignorance widens, enthusiasm for the beauty and mystery of surrounding nature goes far in compensating for the disadvantages of his position. On the other hand, he who has been beguiled into embracing chemistry on the sole ground of believing it to be a "good thing" will either desert it expeditiously or almost surely starve and shower purple curses upon his advisers.

In one respect chemistry resembles measles—every boy and girl should have it, lest an attack in later life should prove more serious. Moreover, whilst it is not only unnecessary, but most undesirable, to present the subject as if every boy and girl were going to be a chemist, it is most important to present it in such a manner that every educated citizen may realize the intimate part which chemistry plays in his daily life. Not only do chemical principles underlie the operations of every industry, but every human being—indeed, every living plant and animal—is, during each moment of healthy life, a practical organic and physical chemist, conducting analytical and synthetical processes of the most complex order with imperturbable serenity. No other branch of knowledge can appeal for attention on comparable grounds; and without suggesting that we should all, individually, acquire sufficient chemical understanding fully to apprehend the changes which our bodies effect so punctually and so

precisely—for this remains beyond the power of trained chemists—it may be claimed that an acquaintance with the general outlines of chemistry would add to the mental equipment of our people a source of abundant intellectual pleasure which is now unfairly denied them. We have been told that the world shall be made a fit place for heroes to live in; but is not the preliminary to this ideal an exposition to those heroes of the wonder and beauty of the world which they already occupy on the principle that if you cannot have what you like, it is elementary wisdom to like what you have? In following the customary practice of surveying matters of interest which have risen from our recent studies, therefore, it is the purpose of this address to emphasise also those æsthetic aspects of chemistry which offer ample justification for the labour which its pursuit involves.

What is breakfast to the average man? A hurried compromise between hunger and the newspaper. How does the chemist regard it? As a daily miracle which gains, rather than loses, freshness as the years proceed. For just think what happens. Before we reach the table frizzled bacon, contemplated or smelt, has actuated a wonderful chemical process in our bodies. The work of Pavlov has shown that if the dog has been accustomed to feed from a familiar bowl the sight of that bowl, even empty, liberates from the appropriate glands a saliva having the same chemical composition as that produced by snuffing the food. This mouth-watering process, an early experience of childhood, is known to the polite physiologist as a "psychic reflex," and the various forms assumed by psychic reflex, responding to the various excitations which arise in the daily life of a human being, must be regarded by the chemical philosopher as a series of demonstrations akin to those which he makes in the laboratory, but hopelessly inimitable with his present mental and material resources. For, extending this principle to the other chemical substances poured successively into the digestive tract, we have to recognize that the minute cells of which our bodies are co-ordinated assemblages possess and exercise a power of synthetic achievement contrasted with which the classical syntheses, occasionally enticing

* Part of Presidential Address on "The Laboratory of the Living Organism" delivered by M. O. Forster, D.Sc., F.R.S., President of the Chemical Section of the British Association.

the modern organic chemist to outbursts of pride, are little more than hesitating preliminaries. Such products of the laboratory, elegant as they appear to us, represent only the fringe of this vast and absorbing subject. Carbohydrates, alkaloids, glucosides and purines, complex as they seem when viewed from the plane of their constituent elements, are but the molecular debris strewing the path of enzyme action and photochemical synthesis, whilst the enzymes produced in the cells, and applied by them in their ceaseless metamorphoses, are so far from having been synthesised by the chemist as to have not even yet been isolated in purified form, although their specific actions may be studied in the tissue-extracts containing them.

Reflect for a moment on the specific actions. The starch in our toast and porridge, the fat in our butter, the proteins in our bacon, all insoluble in water, by transformations otherwise unattainable in the laboratory are smoothly and rapidly rendered transmissible to the blood, which accepts the products of their disintegration with military precision. Even more amazing are the consequences. Remarkable as the foregoing analyses must appear, we can dimly follow their progress by comparison with those more violent disruptions of similar materials revealed to us by laboratory practice, enabling such masters of our craft as Emil Fischer to isolate the resultant individuals. Concurrently with such analyses, however, there proceed syntheses which we can scarcely visualize, much less imitate. The perpetual elaboration of fatty acids from carbohydrates, of proteins from amino-acids, of zymogens and hormones as practised by the living body are beyond the present comprehension of the bio-chemist; but their recognition is his delight, and the hope of ultimately realizing such marvels provides the dazzling goal towards which his efforts are directed.

THE VEGETABLE ALKALOIDS.

The joyous contemplation of these wonders is an inalienable reward of chemical study, but it is denied to the vast majority of our people. The movements of currency exchange, to which the attention of the public has been directed continuously for several years, are clumsy contortions compared with the chemical transformations arising from food exchange. It should not be impossible to bring the skeleton of these transformations within the mental horizon of those who take pleasure in study and reflection; and to those also the distinction between plants and animals should be at least

intelligible. The wonderful power which plants exercise in building up their tissues from carbonic acid, water and nitrogen, contrasted with the powerlessness of animals to utilize these building materials until they have been already assembled by plants, is a phenomenon too fundamental and illuminating to be withheld, as it now is, from all but the few. For by its operation the delicate green carpet, which we all delight in following through the annual process of covering the fields with golden corn, is accomplishing throughout the summer months a vast chemical synthesis of starch for our benefit. Through the tiny pores in those tender blades are circulating freely the gases of the atmosphere, and from those gases—light, intangible nothingness, as we are prone to regard them—this very tangible and important white solid compound is being elaborated. The chemist cannot do this. Plants accomplish it by their most conspicuous feature, greenness, which enables them to put solar energy into cold storage; they are accumulating fuel for subsequent development of bodily heat energy. Side by side with starch, however, these unadvertised silent chemical agencies elaborate molecules even more imposing, in which nitrogen is interwoven with the elements of starch, and thus are produced the vegetable alkaloids.

MICRO-BIO-CHEMISTRY.

Amongst the many sources of pleasure to be found in contemplating the wonders of the universe, and denied to those untrained in scientific principles, is an appreciation of infinitesimal quantities of matter. It may be urged by some that, within the limits of vision imposed by telescope and microscope, ample material exists to satisfy the curiosity of all reasonable people, but the appetite of scientific inquiry is insatiable, and chemistry alone, organic, inorganic, and physical, offers an instrument by which the investigation of basal changes may be carried to regions beyond those encompassed by the astronomer and the microscopist.

It is not within the purpose of this address to survey that revolution which is now taking place in the conception of atomic structure: contributions to this question will be made in our later proceedings and will be followed with deep interest by all members of the Section. Fortunately for our mental balance the discoveries of the current century, whilst profoundly modifying the atomic imagery inherited from our predecessors, have not yet seriously disturbed the principles underlying systematic organic chemistry; but they emphasise in a

forceful manner the intimate connection between different branches of science, because it is from the mathematical physicist that these new ideas have sprung. Their immediate value is to reaffirm the outstanding importance of borderline research and to stimulate interest in sub-microscopic matter.

This interest presents itself to the chemist very early in life and dominates his operations with such insistence as to become axiomatic. So much so that he regards the universe as a vast theatre in which atomic and molecular units assemble and interplay, the resulting patterns into which they fall depending on the physical conditions imposed by nature. This enables him to regard micro-organisms as co-practitioners of his craft, and the chemical achievements of these humble agents have continued to excite his admiration since they were revealed by Pasteur. The sixty years which have now elapsed are rich in contributions to that knowledge which comprises the science of micro-bio-chemistry, and in this province, as in so many others, we have to deplore the fact that the principal advances have been made in countries other than our own. On this ground, fortified by the intimate relation of the science to a number of important industries, A. Chaston Chapman, in a series of illuminating and attractive Cantor Lectures in December, 1920, iterated his plea of the previous year for the foundation of a National Institute of Industrial Micro-biology, whilst H. E. Armstrong, in Birmingham a few weeks later, addressed an appeal to the brewing industry, which, although taking the form of a memorial lecture, is endowed with many lively features depicting in characteristic form the manner in which the problems of brewing chemistry should, in his opinion, be attacked.

Lamenting as we now do so bitterly the accompaniments and consequences of war, it is but natural to snatch at the slender compensations which it offers, and not the least among these must be recognized the stimulus which it gives to scientific inquiry. Pasteur's *Etudes sur la Bière* were inspired by the misfortunes which overtook his country in 1870-71, and the now well-known process of Connstein and Lüdecke for augmenting the production of glycerol from glucose was engendered by parallel circumstances. That acquaintance with the yeast-cell which was an outcome of the former event had, by the time of the latter discovery, ripened into a firm friendship, and those who slander the chemical activities of this genial fungus are defaming a potential benefactor. Equally culpable are those who

ignore them. If children were encouraged to cherish the same intelligent sympathy with yeast-cells which they so willingly display towards domestic animals and silk worms, perhaps there would be fewer crazy dervishes to deny us the moderate use of honest malt-liquors and unsophisticated wines, fewer pitiable maniacs to complicate our social problems by habitual excess.

PHOTOSYNTHESIS.

Beyond a placid acceptance of the more obvious benefits of sunshine, the great majority of educated people have no real conception of the sun's contribution to their existence. What proportion of those who daily use the metropolitan system of tube-railways, for instance, could trace the connection between their progress and the sun? Very moderate instruction comprising the elements of chemistry and energy would enable most of us to apprehend this modern wonder, contemplation of which might help to alleviate the distresses and exasperation of the crush-hours.

For many years past, the problem connected with solar influence which has most intrigued the chemist is to unfold the mechanism enabling green plants to assimilate nitrogen and carbon. Although atmospheric nitrogen has long been recognized as the ultimate supply of that element from which phyto-protoplasm is constructed, modern investigation has indicated as necessary a stage involving association of combined nitrogen with the soil prior to absorption of nitrogen compounds by the roots, with or without bacterial co-operation. Concurrently, the agency by which green plants assimilate carbon is believed to be chlorophyll, operating under solar influence by some such mechanism as has been indicated in a preceding section.

Somewhat revolutionary views on these two points have lately been expressed by Benjamin Moore, and require the strictest examination, not merely owing to the fundamental importance of an accurate solution being reached, but also on account of the stimulating and engaging manner in which he presents the problem. Unusual psychological features have been introduced. Moore's "Bio-chemistry" published three months ago, will be read attentively by many chemists, but the clarity of presentation and the happy sense of conviction which pervade its pages must not be allowed to deter independent inquirers from confirming or modifying his conclusions. The book assumes a novel bio-chemical aspect by describing the life-history of a research. The first two chapters, written before the experiments were begun,

suggest the conditions in which the birth of life may have occurred, whilst their successors describe experiments which were conducted as a test of the speculations and are already receiving critical attention from others (*e.g.*, Baly, Heilbron and Barker, Transactions of the Chemical Society, 1921, p. 1025).

It is with these experiments that we are, at the moment, most concerned. The earliest were directed towards the synthesis of simple organic materials by a transformation of light energy under the influence of inorganic colloids, and indicated that formaldehyde is produced when carbon dioxide passes into uranium or ferric hydroxide sols exposed to sunlight or the mercury arc lamp. Moore then declares that, although since the days of de Saussure (1804) chlorophyll has been regarded as the fundamental agent in the photosynthesis of living matter, there is no experimental evidence that the primary agent may not be contained in the colourless part of the chloroplast, chlorophyll thus being the result of a later synthetic stage. "The function of the chlorophyll may be a protective one to the chloroplast when exposed to light, it may be a light screen as has been suggested by Pringsheim, or it may be concerned in condensations and polymerisations subsequent to the first act of synthesis with production of formaldehyde" (p. 55). In this connection it is significant that chlorosis of green plants will follow a deficiency of iron even in presence of sunlight (Molisch, 1892), and that development of chlorophyll can be restored by supplying this deficiency, although iron is not a component of the chlorophyll molecule; moreover, green leaves etiolated by darkness and then exposed to light regain their chlorophyll, which is, therefore, itself a product arising from photosynthesis.

H. Thiele (1907) recorded the swift conversion of nitrate into nitrite by the rays from a mercury quartz lamp, whilst O. Baudisch (1910) observed that daylight effects the same change and from allied observations was led (1911) to conclude that assimilation of nitrate and nitrite by green plants is a photochemical process. Moore found (1918) that in solutions of nitrate undergoing this reduction green leaves check the accumulation of nitrite, indicating their capacity to absorb the more active compound. Proceeding from the hypothesis that one of the organisms arising earliest in the course of evolution must have possessed, united in a single cell, the dual function of assimilating both carbon and nitrogen, he inquired (1918) whether the simplest unicellular algæ may not also have this power. He satis-

fied himself that in absence of all sources of nitrogen excepting atmospheric, and in presence of carbon dioxide, the unicellular algæ can fix nitrogen, grow and form proteins by transformation of light and energy; the rate of growth is accelerated by the presence of nitrites or oxides of nitrogen, the latter being supplied in gaseous form by the atmosphere. From experiments (1919) with green seaweed (*Enteromorpha compressus*), Moore concluded also that marine algæ assimilate carbon from the bicarbonates of calcium and magnesium present in seawater, which thereby increases in alkalinity, and further convinced himself that the only source of nitrogen available to such growth is the atmosphere. A description of these experiments, which were carried out in conjunction with E. Whitley and T. A. Webster, has appeared also in the Proceedings of the Royal Society (1920 and 1921).

For the purpose of distinguishing between (1) the obsolete view of a vital force disconnected with such forms of energy as are exhibited by non-living transformers and (2) the existence in living cells of only such energy forms as are encountered in non-living systems, Moore uses the expression "biotic energy" to represent that form of energy peculiar to living matter. "The conception, in brief, is that biotic energy is just as closely, and no more, related to the various forms of energy existing apart from life, as these are to one another, and that in presence of the proper and adapted energy transformer, the living cell, it is capable of being formed from or converted into various of these other forms of energy, the law of conservation of energy being obeyed in the process just as it would be if an exchange were taking place between any two or more of the inorganic forms" (p. 128). The most characteristic feature of biotic energy, distinguishing it from all other forms, is the power which it confers upon the specialized transformer to proliferate.

CONCLUSION.

In "The Salvaging of Civilization." H. G. Wells has lately directed the attention of thoughtful people to the imperative need of reconstructing our outlook on life. Convinced that the state-motive which, throughout history, has intensified the self-motive must be replaced by a world-motive if the whole fabric of civilization is not to crumble in ruins, he endeavours to substitute for a League of Nations the conception of a World State. In the judgment of many quite benevolent critics his essay in abstract thought lacks practical value because it underestimates the combative selfishness of

individuals. Try to disguise it as one may, this quality is the one which has enabled man to emerge from savagery, to build up that most wonderful system of colonial organization, the Roman Empire, and to shake off the barbaric lethargy which engulfed Europe in the centuries following the fall of Rome. The real problem is how to harness this combative selfishness. To eradicate it seems impossible, and it has never been difficult to find glaring examples of its insistence among the apostles of eradication. Why cry for the moon? Is it not wiser to recognize this quality as an inherent human characteristic, and whether we brand it as a vice or applaud it as a virtue endeavour to bend it to the elevation of mankind? For it could so be bent. Nature ignored or misunderstood is the enemy of man; nature studied and controlled is his friend. If the attacking force of this combative selfishness could be directed, not towards the perpetuation of quarrels between different races of mankind, but against nature, a limitless field for patience, industry, ingenuity, imagination, scholarship, aggressiveness, rivalry, and acquisitiveness would present itself; a field in which the disappointment of baffled effort would not need to seek revenge in the destruction of our fellow-creatures; a field in which the profit from successful enterprise would automatically spread through all the communities. Surely it is the nature-motive, as distinct from the state-motive or the world-motive, which alone can salvage civilization.

Before long, as history counts time, dire necessity will have impelled mankind to some such course. Already the straws are giving their proverbial indication. The demand for wheat by increasing populations, the rapidly diminishing supplies of timber, the wasteful ravages of insect pests, the less obvious, but more insidious depredations of our microscopic enemies, and the blood-curdling fact that a day must dawn when the last ton of coal and the last gallon of oil have been consumed, are all circumstances which, at present recognized by a small number of individuals comprising the scientific community, must inevitably thrust themselves upon mankind collectively. In the campaign which then will follow, chemistry must occupy a prominent place because it is this branch of science which deals with matter more intimately than any other, revealing its properties, its transformations, its application to existing needs, and its response to new demands. Yet the majority of our people are denied the elements of chemistry in their training, and thus grow to manhood without the

slightest real understanding of their bodily processes and composition, of the wizardry by which living things contribute to their nourishment and to their æsthetic enjoyment of life.

It should not be impossible to bring into the general scheme of secondary education a sufficiency of chemical, physical, mechanical, and biological principles to render every boy and girl of sixteen possessing average intelligence at least accessible by an explanation of modern discoveries. One fallacy of the present system is to assume that relative proficiency in the inorganic branch must be attained before approaching organic chemistry. From the standpoint of correlating scholastic knowledge with the common experiences and contacts of daily life this is quite illogical; from baby's milk to grandpapa's Glaxo the most important things are organic, excepting water. Food (meat, carbohydrate, fat), clothes (cotton, silk, linen, wool), and shelter (wood) are organic, and the symbols for carbon, hydrogen, oxygen and nitrogen can be made the basis of skeleton representations of many fundamental things which happen to us in our daily lives without first explaining their position in the periodic table of all the elements. The curse of mankind is not labour, but waste; misdirection of time, of material, of opportunity, of humanity.

Realization of such an ideal would people the ordered communities with a public alive to the verities, as distinct from irrelevancies of life, and apprehensive of the ultimate danger with which civilization is threatened. It would inoculate that public with a germ of the nature-motive, producing a condition which would reflect itself ultimately upon those entrusted with government. It would provide the mental and sympathetic background upon which the future truth-seeker must work, long before he is implored by a terrified and despairing people to provide them with food and energy. Finally, it would give an unsuspected meaning and an unimagined grace to a hundred commonplace experiences. The quivering glint of massed bluebells in broken sunshine, the joyous radiance of young beech-leaves against the steady cedar, the perfume of hawthorn in the twilight, the florid majesty of rhododendron, the fragrant simplicity of lilac, periodically gladden the most careless heart and the least reverent spirit; but to the chemist they breathe an added message, the assurance that a new season of refreshment has dawned upon the world, and that those delicate syntheses, into the mystery of which it is his happy privilege to penetrate, once again are working their imitable miracles in the laboratory of the living organism.

Beeswax.*

Wax is organically produced in the body of the worker bee from honey and pollen, by secretion. It is formed voluntarily by the bees filling their stomachs with honey, hanging in the hive in chain-like clusters, and remaining perfectly quiet for twenty-four hours. A good deal of pollen is consumed to make up for the wear and tear of tissue during wax secretion. During this period the wax glands convert the honey taken into their bodies into liquid wax which exudes through tiny perforations into eight small pockets, or moulds, situated on the underside of the last four abdominal segments, where it hardens into small white seales. It is then plucked out, made plastic by the admixture of saliva, and utilized for the building of the comb, the hermetic sealing of honey cells, and, with the addition of pollen, for the porous sealing of brood cells. It is computed that from 10 to 20 lb of honey are required to make 1 lb of wax. The work of wax secretion tells severely upon the vital powers of the bee, and as wax is a valuable and costly product, none of it should be wasted.

HOW TO COLLECT WAX.

When cleaning hives or appliances, a box should be kept for the collection of all refuse and burr combs. The scrapings from the floor board, which are generally thrown on the ground during spring cleaning, should be saved, although they contain a quantity of dirt and propolis, for there is generally sufficient wax to make it worth the trouble of collection and extraction. The honey combs used for extracting do not wear out, but last indefinitely; brood combs, on the contrary, become thickened by the cocoons and cast skins of the moulting larvæ, and must be continually renewed. Wax can, therefore, be obtained from old brood combs and the cappings from extracting combs.

METHODS OF EXTRACTION.

The extraction of the wax may be made by using: (1) The Solar Wax Extractor; (2) steam; (3) boiling water; or (4) the heat of the oven.

The Solar Wax Extractor is the most efficient and economical method. The cost of the Extractor is the only expense incurred, as the sun provides the necessary heat. The appliance is really a miniature garden frame, with a double glazed and hinged light. Inside, the frame is fitted with a metal tray which slopes down to a tin through covered with wire gauze. The

extractor is placed in a sunny position and the material to be treated is spread thinly over the bottom of the metal tray. The wax melts and runs into the trough, being strained of impurities by the wire gauze covering. When the melted wax ceases to flow, the dross remaining in the tray is removed and a fresh supply of material given. Another advantage of this extractor is that no storage of old combs or refuse is necessary; these can be put in for treatment as collected.

If a garden frame is available, it can be used for extracting wax by placing the material to be treated in a perforated zinc tray over a metal box (such, for instance, as a biscuit tin), placed close up to the glass light. Wax extracted by solar heat improves in colour instead of deteriorating, as it may do when steam or boiling water is used.

Steam.—The material to be extracted by methods (2) and (3) must be stored until required in an air-tight tin, for protection against the ravages of the wax moth. In the winter it can be melted over the kitchen fire by means of a Gerster wax extractor.

This is an arrangement similar to a domestic steamer. It consists of a cylindrical, perforated, tin basket, having a cone-shaped tube running up the centre which is also perforated, and open at the top to allow the steam to percolate right through the combs or wax that are placed in it for melting. The upper part of the appliance consists of a circular-shaped pan, having a false bottom or tray about $1\frac{1}{2}$ in. deep. This is fixed so that there is a space between it and the wall of the pan, in order that the steam can pass up the sides and into the perforated basket.

From this tray the melted wax passes through a tube. There is also a cone-shaped tube running up from the tray, which fits very loosely into a similar perforated tube in the basket. When placed in position this is open at the top to allow the steam to pass through and thus permeate the wax or combs in the basket. The basket does not fit close down on the tray, but is raised about 1 in. on three legs. The bottom pan is for water only.

The method of working is as follows:—The perforated basket is filled with comb which has first been broken into small pieces; these should not be pressed down, but put in as loosely as possible. The basket is placed in position in the pan and covered with the lid. The pan

* From a Leaflet published by the British Ministry of Agriculture and Fisheries.

is now fitted on a second pan, which has previously been filled with rain water. The appliance is then put on the fire, and when the water boils the steam will melt the wax from the combs in the perforated basket. The molten wax will ooze out through the perforations, run down the sides of the basket into the tray, and thence out of the tube, where it drops into cold rain water, contained in a vessel placed for the purpose of receiving it. As soon as it is cold, the wax will be found to have set in a cake, when it can be lifted off. When all the wax has been extracted the dross is removed from the basket and the process repeated.

As the water boils away very rapidly it will be necessary to replace it from time to time; by means of a funnel this can be done without removing the appliance from the fire.

Cappings from the shallow combs, when cut off for extracting the honey, can also be melted in the same manner. Before putting them in the basket, however, they should be drained free from honey, well washed in rain water, and dried in the sun.

Boiling Water.—To extract wax by means of boiling water, the material should be tied in a bag made of porous fabric, such as cheese straining cloth, and placed on laths of wood crossing the bottom of a copper or saucepan, so that the bag does not touch the bottom. The bag should be weighted with a stone, and water then poured in until it flows above the bag. The melted wax will percolate through the bag and float on the water, and when cold it can be lifted off in a solid cake. A little dross will be found on the bottom of the cake, but this can be removed by scraping. If a well-cleansed sample is desired, the cake should be remelted in a similar manner, and cooled slowly. Rain water must be used in methods 2 and 3, as hard water contains lime, which would spoil the texture and colour of the wax. More wax will be obtained if pressure is applied to the bag while boiling, and in the case of old combs, if these are well soaked in water previously to melting.

The heat of the oven.—If only a small quantity of wax is to be dealt with, it may be placed on a piece of perforated zinc over a bowl of rain water, and put in the oven. The wax will melt and drop through the perforated zinc into the water; the impurities will remain on the zinc and can be thrown away. The bowl is then taken out of the oven and the water and wax allowed to cool, when the latter will have set in a cake and can be lifted off.

CHARACTERISTICS OF PURE WAX.

The melting point of pure beeswax is between

63° and 64° C., which is a higher than that of any other wax. The colour, which varies from pale primrose to orange red, depends to a great extent upon the variety of pollen consumed by the bees. It is a curious fact that dark honey produces a light wax, while light honey yields one of a darker hue.

For commercial purposes the lightest coloured wax commands the best price, and, therefore, before extracting, it is advisable to grade the combs. Those which have not been occupied by brood, and also cappings removed from combs previous to extracting the honey, will yield the best wax, and should be sorted out and melted separately from old combs, which will yield a darker and consequently less valuable wax.

ADULTERATION.

The following are simple tests for detecting adulteration of beeswax:—

(1) A small piece of wax placed in the mouth and chewed should not adhere to the teeth, or become pasty, but, generally speaking, should disintegrate into small fragments, and have no unpleasant taste.

(2) Place a piece of suspected wax (of the size of a small nut) into a test tube, half fill with spirits of turpentine, and carefully warm over the flame of a spirit lamp. If the solution is cloudy, or a deposit is thrown down, the solution is not complete, and the wax is adulterated, as spirits of turpentine completely dissolve pure beeswax.

Debts owed to United States.

Omitting almost a billion dollars of accrued interest, the nations owe the United States more than ten billions of dollars, made up roughly of the following amounts:—

Great Britain	..	..	\$4,166,000,000
France	..	..	3,351,000,000
Italy	..	..	1,648,000,000
Belgium	..	..	375,000,000
Russia	..	..	193,000,000
Poland	..	..	136,000,000
Czecho-Slovakia	..	..	91,000,000
Serbia	..	..	51,000,000
Roumania	..	..	36,000,000
Austria	..	..	24,000,000
Greece	..	..	15,000,000
Esthonia	..	..	14,000,000
Armenia	..	..	12,000,000
Cuba	..	..	9,000,000
Finland	..	..	8,000,000
Latvia	..	..	5,000,000
Lituania	..	..	5,000,000
Hungary	..	..	1,700,000
Liberia	..	..	26,000

This debt is being increased by accruing interest at the rate of about \$1,500,000 a day. In addition, it is estimated that over \$3,000,000,000 is owed to American banks and business men by foreign countries and their citizens.

Experiments in Road-making at Nice.

Some interesting experiments in road-making are now being made near Nice, at Lagnes, a village on the great highway to Marseilles, just beyond the bridge over the Var, a spot much frequented by automobiles. A length of about 2 kilometres ($1\frac{1}{4}$ miles) is being relaid with a new composition called *Siliditit*, a kind of concrete, the speciality of a French Company, "La Siliditit Franc aise". The work is being executed under the supervision of the engineers of the Ponts et Chaussées. The substance used differs somewhat from the ordinary concrete being not merely a mixture of the siliditit with the ballast, but rather a chemical combination. The mass thus obtained is essentially a new compound, instead of a simple mixture, as is the case when Portland cement and ordinary ballast are used.

This new material, patented about 10 years ago in Italy, and known in France somewhat more recently, contains certain ingredients obtainable principally in Italy, including quartz, felspar, etc., which are embodied in the special cement called *Siliditit*. It is the mixture of these substances, with water, which gives to

the new material its special degree of hardness. When the roadway has been properly prepared, a layer of ordinary concrete (ballast and Portland cement) 15 centimetres (6 inches) deep is first laid and well rammed and rounded to form the shape of the road. Before this has completely set, a layer of the new material, 4 centimetres (about $1\frac{3}{4}$ inches) deep is spread over and well rammed with specially designed rammers worked by compressed air, at a pressure of 6 atmospheres, which gives about 400 blows per minute. This is afterwards smoothed down by a steam roller, and in less than 48 hours, the new road is ready for use.

The advantages of this new system are greater cohesion of the mass, cleanliness, and greater resistance to compression. Should the experiment prove successful, it is intended to try the material on about 10 kilometres (6 miles) on the road to Monte Carlo, where its freedom from dust, etc., will prove a great advantage.

Another experiment of the same kind is being made on the main road between St. Etienne and Lyons.

Economics.

The following letter has been received from the Secretary to the London School of Economics and Political Science:—

With regard to the admission of Indian students, in view of the large number of such students presenting themselves, and in order to ensure, in the interests of the students themselves, that only persons who will undoubtedly profit by the courses here shall be admitted, applications for admission for First Degree or Diploma Courses from students in India can only be considered in the case of graduates of Indian or other Universities.

In addition, all students whose mother-tongue is not English are required to pass an examination in English at the School before being admitted, except in cases where evidence can be produced of a sufficient knowledge of the language.

It is advisable that applications from

students who desire to be admitted in October of the year should be received not later than the preceding April. Applications should be made in the first place through the Office of the High Commissioner for India.

Students with First Degrees from Indian and certain other overseas Universities can be accepted as candidates for higher degrees provided that they have obtained First Class Honours in their Final Degree Examination with Economics as their major subject.

A Cambridge graduate who has taken the Economics Tripos can get exemption from the B.Sc. (Econ.) and proceed to the M.Sc. or the Ph.D., but it is only possible in exceptional cases for any student who has not obtained the M.Sc. to proceed straight away to the D.Sc. He must produce evidence, chiefly by reference to published works, that he has done work of the standard that may reasonably be expected of a candidate for the M.Sc.

India at the Washington Conference.

(From our Washington Correspondent.)

Washington Dc., U.S.A.—Nov. 9, 1921.—Interviewed by the correspondent of the *Washington Herald*, Mr. V. S. Sastri, who has arrived here in connection with the Conference relating to reduction of armaments, gave an idea of the position of India at the Conference. According to him, India is strong for Peace. Mr. Sastri said :—

I am a member of the British delegation, but represent the special interests and view-point of

Empire, though it was there, but a clear recognition that we were fighting for the civilization of the world and the maintenance of right among the nations. Having secured that object, our next desire in common with other peoples, is to secure an abiding friendship and good-will among the world's great communities. We welcome, therefore, with all our hearts any step toward that end which may be taken in the shape of a reduction of armaments.



Mr. V. S. SRINIVASA SASTRI, P. C.

India. We are a huge population, numbering many millions. But our disposition, taken altogether, is decidedly pacific. We have had domestic wars of sorts in our country, but never within the period of recorded history have we indulged in a war of aggression beyond our borders or interfered with the liberties of other peoples. Peace, peace, peace, intoned three times, is part of the daily prayer of our most numerous community. And it is the peace not of the external world merely, which ceases from wars and brawls and all sorts of noisy discord, but the peace of the heart, which will not harbour harshness of thought and is in reality that serenity of soul which passeth all understanding.

True, our armies took part in the world war on various fronts. But what moved us then was not merely our allegiance to the British

Our own taxes, as a result of the burden of war, have become intolerable and our government is faced with a heavy deficit and greatly restricted national resources. Any positive measures to ease military burdens undertaken by the great powers cannot but have a beneficial reaction on our finances and would be welcomed with the joy of relief by untold millions.

I would add a sincere word of admiration and gratitude to the President of the greatest republic in the world for summoning this conference. No assemblage has a nobler purpose, and no deliberations will be watched in every quarter of the globe with greater anxiety and more fervid prayers for success by the varied populations. India, through me and my colleagues, salutes the great country which has done as much as any in history for the freedom and happiness of mankind.

The World's Sugar Situation in 1920 and the Present Position.

By KASANJI D. NAIK, M.A.,
Secretary, Sugar Bureau in charge.

In the history of sugar the year 1920 will be remembered principally for three things—(1) the price commanded by sugar in the month of May which was the highest ever recorded, (2) the unprecedented rapidity with which the rise in price took place and (3) the decline that followed. It is necessary to give a brief retrospect of conditions in the previous years to enable the reader to follow the situation that developed during the year. Up to the end of November 1919 the British Royal Commission on Sugar Supply and the American Equalization Board had jointly arranged for the purchase and supply of sugar for Europe and America. The Cuban crop of 1917-18 was purchased at the price of 4.60 cents per lb f.o.b. Cuba; that of 1918-19 at the price of 5.50 cents per lb f.o.b. Cuba. During the latter half of 1919 while there was no uncertainty as regards the continuance of the British Royal Commission it was doubtful whether the American Board would have its term renewed. During this period of uncertainty a large part of the Cuban sugar was purchased by European buyers and others for Eastern markets at 6½ cents per lb. On the 1st of January open market conditions came to prevail in the United States of America so far as sugar was concerned and at that time Cuba was unwilling to sell except at advanced prices. As the consumption of sugar in the United States had been heavy in the autumn of 1919 and the stocks were reduced to 375,111 tons on the first of January 1920—a very low figure as compared with 686,582 tons on the corresponding date in the previous year—and as a shortage of the world's sugar crop was apprehended, there ensued a scramble for sugar. The United States began to purchase from all over the world. The price paid was a secondary question; the all important thing was to secure a supply.

As pointed out by Messrs. Willett and Gray, one of the strongest factors responsible for the increase in price was the fact that the United States dollar was at a premium in every country in the world. This placed the United States in an advantageous position for purchasing the world's markets, as every other country could only compete with depreciated currencies. As the "*Produce Markets' Review*" puts it, the enormous impulse which was given to the

world's value of sugar by American action unfortunately led to extravagant speculation, and although very heavy buying of the Cuban crop by the Royal Commission in England and other European countries by the middle of March covering shipments up to July and disappointing Cuban production of 3,730,077 tons as compared with the estimated production of 4,300,000 tons served as sound-bases for operations, the movement was carried much too far and ended in disaster, the effect of which was felt in all the principal cane producing countries.

IN CUBA AND JAVA.

As Europe did not produce enough beet-sugar even for its own requirements, it will do if we restrict ourselves to a consideration of the production and market conditions in Cuba and Java which are the two principal cane-sugar producing and exporting countries in the world.

In Cuba the year 1920 opened with raw sugar selling at 10¾ cents per lb. In the month of January except for a temporary drop the price rose to 12 cents. From early February to the beginning of March a decline from 12 cents to 9 cents f.o.b. Cuba was caused by a large offering of ready sugars from both Cuba and Porto Rico with some pressure to sell. From 2nd of March the price began to soar higher and higher reaching 22½ cents per lb on the 19th May 1920.

It may be mentioned that the Cubans withdrew their supplies of sugar towards the end of May in the expectation of getting still higher prices. The Americans then began to purchase from other sources, *e.g.*, Java and the Philippines and the unusually high price then prevailing attracted sugar from all corners of the world.

Cuba offered to sell her sugar to the British Royal Commission at 130s. per cwt. f.o.b. Cuba, but the offer was refused as 200,000 tons of the coming Mauritius crop was accepted by the Commission at a price of 90s. per cwt. f.o.b. Mauritius. The high price of sugar checked consumption and Cuba was being undersold by other countries with the result that a regular decline followed.

During August-September the weakness of the markets became more pronounced with favourable reports of the European beet-crop and the next Cuban crop, pointing to an increase of nearly a million and a half tons. The position in the American market was further weakened by the prospect of an unusually heavy home grown beet-crop.*

In November the financial position of Cuba and America became very serious and as the plans devised to take over the extensive loans made by the Cuban banks failed to mature, a further weakness in the sugar market was caused by the action of those who were forced to sell.

On 16th November Cuban raw sugar touched the low figure of $5\frac{1}{2}$ cents including cost and freight, New York. On 22nd November the quotation was $4\frac{3}{4}$ cents.

At the end of the year 224,556 tons out of the total Cuban crop of 3,730,077 tons were estimated as still stored in that island owing to the refusal of planters to sell freely after this sharp decline in price. The following table taken from "the Federal Reporter," dated 29th December 1920, shows the distribution of exports of sugar from Cuba during the year 1920 :—

DISTRIBUTION OF EXPORTS OF SUGAR FROM CUBA UP TO 25TH DECEMBER

	1920	1919
1. United States Ports ..	2,475,390	2,909,426
2. Canada	185,044	85,874
3. United Kingdom ..	504,010	614,500
4. France	57,979	163,300
5. Spain	11,142	28,570
6. Mexico	2,474	1,063
7. Holland	30,357	2,824
8. Belgium	22,992	4,144
9. Nassau	65	nil
10. Egypt	8,007	nil
11. Australia	10,961	nil
12. Constantinople ..	nil	4,912
13. Roumania	nil	9,100
14. Sweden	17,665	nil
15. Turkey	nil	7,582
16. Russia	nil	1,429
17. Algiers	nil	3,188
18. Italy	14	nil
19. Other Countries ..	850,710	†920,486
TOTAL ..	3,326,100	3,829,912

* The United States beet-crop totalled 969,419 tons in the season 1920-21 as compared with 652,957 tons in 1919-21.

† Includes 6,622 tons of refined sugar distributed as follows :—

Java produced during the season May to November 1920, a sugar crop of 1,509,200 tons. The bulk of the crop was sold very early in the year at high prices and the subsequent enormous rise in the world's markets enabled the producers to sell out their whole crop at top prices. In the words of His Majesty's British Consul at Sourabaya exporters and speculators made and lost enormous fortunes but beyond the collapse of a young Scandinavian firm and two speculators the trade as a whole came through the crisis in a most satisfactory manner which must be largely attributed to the fact that the amounts at stake were so enormous and the business relations of the various speculators so involved that nothing short of a most liberal spirit of give and take would avert wholesale disaster.

	Tons
France	2,286
Spain	514
Constantinople ..	2,240
Turkey	1,582
Total ...	6,622

For the available sugar left over from the previous crop 50 guilders (1 guilder=1s. 8d.) per picul (picul=136 lbs.) were paid early in 1920 and for the new crop to be delivered in August-September 37 guilders were offered—four times the pre-war price. Towards the latter part of May Java sugar reached the top price of 75 guilders per picul for superior and 70 guilders for channel assortment. In January 1921, as Cuba quotations dropped off gradually from $4\frac{1}{2}$ to $3\frac{7}{8}$ cents, and even a quotation of $3\frac{1}{2}$ cents was reported, its effect was felt in Java also where the prices dropped and old crop sugar was offered at 24.75 guilders and new crop sugars at 19 guilders. The subjoined table taken from the report of His Majesty's British Consul at Sourabaya, shows the exports of sugar from Java during the three years 1918, 1919 and 1920 :—

	1918	1919	1920
British India ..	364,880	298,440	262,905
Japan	328,745	249,661	119,108
Hongkong	299,935	170,176	155,473
Singapore	158,650	58,988	35,084
England	67,307	121,245	50,236
Norway	22,311	50,955	27,195
France	23,635	48,398	11,830
Australia	265	73,144	80,795
Suez	34,732	10,822	16,463
Italy	2,950	33,937	23,047
China	24,810	3,470	780
Holland .. ..	..	21,624	9,042

	1918	1919	1920
Greece	9,025	8,371	..
Turkey .. ..	..	23,694	..
Sweden .. ..	..	11,565	30,964
Spain .. ..	..	7,020	3,011
Roumania .. ..	..	3,984	..
Denmark .. ..	..	2,408	..
Siam	1,638	..	110
Russia .. ..	..	1,437	10,909
United States	500	..	209,199
Belgium .. ..	..	50	5,557

POSITION IN THE PRINCIPAL CONSUMING COUNTRIES.

We will now briefly review the position in the principal consuming countries.

The United States of America is the largest consumer of sugar in the world. During the year 1920 a total consumption of 4,084,672 long tons was registered in that country as against 4,067,671 tons in 1919. The feature of the year was the heavy importation of Java and other sugars which pay the full tariff rates upon entering the United States, and a decrease in the imports from Cuba. All the sugar imported during the year was not consumed and a large amount had to be carried over.

During the greater part of the year America ruled the sugar markets of the world and it was in the United States that the idea of sugar-shortage was the most prevalent in the spring. Not that anybody who wanted sugar had actually to go without it. But with the experience of the two previous years under Government control the manufacturing and the grocery trade in the United States who usually buy their sugar from the refiners in the country thought it prudent to lay in stocks and began to purchase direct from foreign producers beyond all possible needs of the country. It is estimated that some 500,000 tons of direct consumption sugars were thus purchased from practically all over the world. As pointed out in the Annual Report of the American Sugar Refining Company "these vast commitments by the trade apart from their commitments through refiners could not have been foreseen as no machinery is available for recording them. Many of these sugars were found on arrival to be unfit for household or canning use. Part were of dark colour. Some required to be cleaned and purified by the refining process. Most of the purchases were under confirmed letters of credit and payment became a most difficult problem resulting in attempted resales which hastened the collapse of prices." In short the year was one of considerable anxiety and loss to the sugar trade in the country.

In England the Royal Commission continued to provide for the purchase of foreign sugar and its distribution within the country. The control of sugar was continued throughout the year but many restrictions affecting distribution were revised or removed altogether.

As remarked by Messrs. William Connal & Co., sugar brokers of Glasgow, in their annual report of the Sugar Trade during the year 1920, British refiners had every reason to be grateful to the Royal Commission for having controlled their market during the year and for having relieved them of all difficulty in providing for their wants. Had they been uncontrolled, they might have shared the fate of the American and Canadian refiners who have come through times of great hardship, anxiety and loss.

At the commencement of the year the position of stocks in the United Kingdom was so serious that the Food Controller issued a warning that a temporary reduction of the domestic ration might become necessary. At the same time manufacturer's allowances were curtailed. Towards the end of March the price of granulated sugar was increased from 66s. to 80s. per cwt. and in May to 112s., which price was maintained until the beginning of November. Then it began to fall until at the end of December 80s. was reached. The total consumption of the United Kingdom amounted to 1,221,629 tons which is over 400,000 tons below that of the previous year.

France produced during the season 1919-20 155,102 metric tons of refined sugar. She imported 701,508 tons expressed in terms of refined sugar and exported 168,613 tons during the year. Some 700,000 tons were thus available for consumption.

Germany in the season 1919-20 produced 644,000 metric tons of refined sugar, carried over a stock of 144,000 tons from the previous campaign and imported 70,000 tons. Out of this total of 858,000 tons she consumed 848,000 tons leaving only 10,000 tons for the following season.

The republic of Czecho-Slovakia carried over a stock of 208,182 tons from the previous season and produced about 491,478 tons of sugar in the season 1919-20 out of which she met her own requirements and exported 269,079 tons. Among the European beet-producing countries she was the largest exporter of sugar.

Poland produced 74,000 tons of beet sugar in 1919-20. In spite of this small production she exported 6,000 tons to Great Britain.

In India during the season 1919-20 the production of all kinds of cane gurs was estimated at 2,651,000 tons and palm gur production at

approximately 300,000 tons. After deducting the quantity of gur used for refining in the country and exported by land and sea 2,572,000 tons of gur were left for internal consumption. India's production of refined sugar in modern factories and refineries as well as in the small establishments following the indigenous process of refining amounted to 177,569 tons out of which she exported by sea 4,301 tons valued at Rs. 37,08,300. She imported by sea 313,722 tons of refined sugar (including a small quantity, 724 tons, of raws) valued at Rs. 21,85,08,480 from which 77,689 tons were re-exported and 5,845 tons were exported by land, thus leaving for direct consumption 230,198 tons net valued at Rs. 14,85,36,160. On account of the high price of sugar which reached Rs. 40 per maund in May the net quantity of foreign sugar imported is barely one-third of what was imported in the pre-war year 1913 though the total amount paid for imports is higher than in that year.

It is not necessary to give details regarding other countries. It will do if we sum up the general position of the world regarding sugar in 1920 as follows:—During the season 1919-20 there was a decrease of nearly 700,000 tons in the world's production of cane and beet-sugar as compared with the previous year (1919-20 production=15,150,452 long tons; 1918-19=15,852,660 tons). This shortage of sugar combined with other causes detailed above led to tremendous speculation. The top prices reached in May led to extensive planting in Cuba. The high prices induced larger sowings of the beet crop in the United States of America. The same was the case in Continental Europe. Further the abnormal rise in the price of sugar checked consumption all over the world. The result was that at the beginning of the year 1921 the United States of America had a stock of 1,093,545 tons on hand as against a stock of 375,111 tons in 1920. Cuba also carried over a surplus of 224,556 tons from the last crop.

PRESENT POSITION.

The year 1921 thus opened with a large stock of old crop sugars and with the prospect of the world's new sugar crop being better by a million and a quarter long tons than the previous year although the total production was still some 2 million tons less than in the year 1913-14. The production of beet sugar in Europe showed an increase of over 1 million tons while that of the United States of America was the highest on record being 969,419 long tons. Cuba in spite of the monetary difficulties has managed to secure a good crop of nearly 3,900,000 tons

while Java's production is estimated to be about 50,000 tons higher than in the previous year.

Consumption decreased in Europe as the result of her impoverished condition, the higher taxes which Governments in various countries thought fit to place on sugar for revenue purposes, industrial stagnation, unemployment, and the unfavourable state of exchange. In England the Royal Commission on the Sugar Supply ceased to function with effect from 28th February. Sugar then became free of control to all except the British refiners who by agreement with the Commission continued to use up the Government's remaining supplies of raws at prices subject to constant revisions. At one time it looked as though the consumption in the United Kingdom would increase but the coal strike, etc., affected the consumption as will be seen from the following figures for the first six months of the year:—

January to June	Consumption
1921	687,572 long tons
1920	690,103 „ „
1913	870,574 „ „

In the United States of America no appreciable increase in consumption is so far reported. Germany is trying to manage with the carry over of the last season (10,000 tons) and her production of 970,000 tons. France is showing signs of underconsumption as her figures for the first four months of the year are only 145,835 tons, nearly a hundred thousand tons less than the average of the previous year for these four months. Czecho-Slovakia is estimated to have made some 713,000 tons out of which 300,000 tons were available for export. Poland is estimated to have produced 190,000 tons of refined sugar this year but in the interest of the finances of the country the Government is strictly limiting consumption in order to allow for the largest possible export. It is estimated that about 100,000 tons would be available for export.

Thus it was that, while the world's production increased by only a million and a quarter tons during the year, the reduced purchasing power of the European countries, and the industrial and other troubles elsewhere combined to lessen the demand for sugar.

Early in February the price of Cuban raw sugar touched the low figure of 3·5 cents c. & f. New York. As this price was below the cost of production, and as there was difficulty in financing the crop as the result of the moratorium that had been in effect for several months, the Cuban Government, desiring primarily

to stabilize the price of sugar, formed a Sugar Commission on 11th February 1921, to control the sale of all sugar except that sold or contracted for prior to that date. This uncontrolled sugar amounted to a million and a quarter tons and was sold independently. The presence of this uncontrolled sugar together with the general under-consumption in the world hampered the Commission in its work of disposing of the sugar controlled by it at remunerative rates. On July 8th the price per lb of Cuban raw sugar was 3 cents, c. & f. New York and nearly 1,400,000 tons of Cuban sugar were still unsold on that date. The uncontrolled sugar has, however, now all been disposed of. As all invisible stocks of sugar within the country have been practically exhausted and as other outside sources of supply for the United States of America have also been laid under contribution, there has recently been a tendency to firmness in the Cuban market and prices have steadily advanced. But there is such a large amount of unsold Cuban sugar waiting for a market that it is feared it will not be disposed of in the ordinary course before the new crop sugar enters on the market. To relieve this situation therefore a bold scheme of Government bond issue has been put forward and has every chance of being carried into effect. As described in the *International Sugar Journal* the plan is to issue forty million dollars worth of bonds guaranteed by the Cuban Government at 6 per cent interest payable within 20 years and the interest secured by a tax of 30 cents to be levied on each bag of sugar made during the currency of the loan. With these funds a specially organized Company under Government control, to be called the Sugar Industry of Cuba Company, will buy up about a million tons of the present surplus supplies of sugar paying for them not in cash but in these bonds. This sugar would be disposed of as opportunity offered, not on the open market and preferably to countries which are in need of sugar but can only offer deferred payment for their purchase. By this means the sugar manufacturers of Cuba would be placed in a position to fund their coming crop while the competitive market relieved of the bulk of the surplus of the 1920-21 crop would be able to start operations on the 1921-22 crop on a more natural basis of supply and demand. In all probability there will be a market for this sugar in Europe as the next beet crop has been affected by drought and as all invisible supplies of sugar have been used up. It is expected that sugar will be decontrolled in some European countries and if the general

industrial and exchange position improves Europe can consume this amount in addition to its own production of beet sugar.

No such difficulty has apparently been felt by Java in the disposal of her crop as comparatively lower prices—and these went down even to 11 guilders per picul—have enabled India and the Eastern countries to purchase larger quantities of sugar. India alone is reported to have taken over 200,000 tons from Java and may take more if the price is favourable. Thus it is that Java has not much to fear in the near future as with lower prices, these markets are capable of absorbing the sugar that she produces.

Building Boards.

FROM SUGARCANE REFUSE.

“The value of sugarcane bagasse as fuel is, of course, a long established fact. The very fact that it possessed this value and that the exhausted cane ‘chips’ from the diffusion process could not be burnt, was the deciding factor that eliminated diffusion as a method of cane juice extraction. The manufacture of paper from bagasse has been attempted, but, as far as our information extends, never successfully, in an industrial way. The fibre of bagasse does not seem exactly suitable for paper-making purposes, the paper made from it being brittle and lacking toughness. Besides, the value of the bagasse as fuel estimated theoretically but not industrially, by Professor Kerr, at 8.30 B. T. U. per pound; in the case of perfectly dry bagasse rendered it difficult for the paper manufacturers to procure the bagasse at a price that would make their paper-making venture profitable. Of course the actual fuel value of the waste bagasse coming from the mills is very much less than this because of the high amount of the moisture it contains.”

THE CELOTEX BOARDS.

But a more profitable industrial use of the cane chips has recently been introduced at Minnesotu Canada where it is pulped like paper first and then rolled into ‘boards’ or planks for building purposes. The new material is called ‘Celotex’ and is put on the market cut into proper length like ordinary planking in bundles. The plant used is almost similar to paper plant with the addition of some ingenious arrangements to-day the board as it leaves the rolls and sawing it into proper lengths.

A Travancore Project.

By A. P. Smith.

About three years ago the Government of India deputed a Hydro-Electric expert to travel throughout India — Indian States excepted — and to ascertain the possibilities of generating electric power for the various purposes it is used, by means of water-power. This investigation was supplementary to the recommendations of the Industrial Commission. The result as far as we remember was that the expectation of much water-power being available was justified and that engineering skill, enterprise and money only were required to create a source of power which would help materially to promote the welfare and prosperity of India. Although the legend exists in the meteorological department of Travancore that “there are no months without rain and that the rainfall is sufficient for all practical purposes, the fact remains that during the summer months there is a great want of water even for potable purposes. In the capital itself the urgency of an efficient water-supply has long been on the tapis, but Dewan after Dewan has reigned and retired and Trivandrum is no nearer a water-supply than it was half a century ago. Before embarking on more ambitious schemes a good water-supply to the capital city is of more pressing importance than the Kullar Hydro-Electric project regarding which an informal Conference was held in Trivandrum on the 12th November 1921. This may be considered a parochial view, but there are other towns than Trivandrum which need a good water-supply for both drinking and the irrigation of the fields and these are more likely to promote the health and happiness of the people than problematical projects for which there appears to be no very urgent necessity at a time when prices of material run unusually high and are not easy to procure. Be that as it may, from the proceedings of the Conference above mentioned it is proposed to provide electric power for the State and for the Cochin State — if “Cochin” includes the State from the Kullar falls 15 miles due north of Kunili on the Peermaad Hills from where the water near the Tekkodi Tunnel is conveyed to the thirsty plains of Madura. At the informal Conference aforesaid the Dewan presided and 12 official and 27 non-official members took part. Inclusive with the latter was Mr. B. D. Richards of Messrs. Dickinson & Co., Consulting Engineers. The falls from which it is proposed to derive power are 250 feet in height, but the height is not

of great importance, inasmuch as it is suggested that a masonry dam should be constructed at the head of the fall to impound water in an area 4 sq. miles in extent. At the eastern extremity of this artificial reservoir a tunnel will be constructed to convey the water through a pipeline to the Power House at the foot of the Ghats in the Kumbum valley with a fall of about 1,000 feet. This project was considered some time ago by the Madras Government in order to supplement the Tekkodi supply but the project did not materialize owing to the fact that the Travancore Government had declined permission to the Madras Government to work the scheme. Inasmuch, however, that the Travancore Government co-operated with the Madras Government in the preliminary investigations, the plans and surveys made then are in the possession of the former and will be of use in their investigation of the present project provided that the Madras Government have no objection to advance in their turn, — as the power station will be in British territory — a very possible event. At the Conference of the 12th November, Mr. F. J. Jacob, Chief Engineer of the State P. W. D., detailed the numerous uses to which the power derived from the project could be put and remarked that Cochin would benefit from the scheme if established. The distances to the various business centres of Cochin, Kottayam, Alleppey, Quilon and Trivandrum were 75, 46, 61, 76 and 94 miles respectively; the longest road distance being 241 miles. The project included the acquisition of 2,000 acres of land in which were situated a number of cardamom gardens. Mr. Jacob thought that the Travancore public would do well to take shares towards financing the scheme in view to establishing industrial undertakings when the power was made available.

Mr. Richards without entering on the probable cost of the construction declared that at a rough estimate the Kullar river would yield at 20,000 H.P. continuously for 24 hours for every day in the year. Allowing for the limited working hours in factories dependent for their power on the project, the total available power would probably amount to 50,000 H.P. He suggested that the question of developing the scheme should be attempted to a small extent at first, gradually increasing it by stages to suit the demand that would arise.

The Dewan added that if the Power House

was not to be located in British Territory, fresh negotiations would have to be opened to ascertain whether the Madras Government would require water for irrigation and what *quid pro quo* would be given to Travancore. Mr. Richards was confident that a private company would be able to obtain permission for the erection of a power station in British territory. A discussion as to the possibilities of the project from an industrial and commercial point of view was started by Dr. Kunjan Pillay, the Agricultural and Fisheries Director to which Mr. Richards contributed some useful information.

Mr. Parratt, Executive Engineer, opined that considering the local demand he would not recommend the State assuming the management of the project and suggested the grant of a concession to a private company willing to undertake the work granting them a monopoly of electrical power supply in Travancore in return for the royalty of one pie per unit for the water-power — the property of the State. As it was observed at the meeting the question to be ultimately decided was whether it is possible for the State to undertake the investigation and execution of the project or whether it would be more profitable to hand the same to a company on a concession and under explicit conditions. Finally it was resolved to apply officially to the Madras Government to ascertain their views regarding irrigation, the *quid pro quo* for water for the purpose made available and the location of a power-house in British Territory. Mr. Richards was also requested to visit the Karimbankuthu falls, which would permit of a power station being built in Travancore Territory, would be less costly, more advantageous and nearer to Cochin than the Kallar River scheme. Mr. Richards stated that before selecting Kullar he had visited the other falls in the neighbourhood, and gave preference to the Kallar project as possessing greater advantages than any of the others.

In these circumstances the Kallar Hydro-Electric Project may be considered to be in abeyance till the wishes of the Madras Government are ascertained.

Meanwhile as the Kallar scheme is mainly for the purposes of industrial development on a profitable basis, at the third meeting of the Travancore Economic Development Board held on the 14th November 1921 relative to which we publish another article in this number, —among other matters referred to was the Karimbankuthu falls which the Board considered as vastly preferable to the Kallar scheme.

Comparing both the projects the following opinion was recorded:—

“The Kallar river at the site of the Dam has only 70·80 sq. miles catchment. The dry weather flow is only between 10 and 20 cusecs. On the other hand the Karimbankuthu falls (No. X, page 5, of “Important papers *re* Kallar Hydro-Electric Scheme”) is on the main Periyar river, the catchment is 700 sq. miles (including the catchment of the Periyar Lake) and the dry weather flow is from 150-180 cusecs. At the falls the vertical drop is only 30 ft. But by a leading channel 5 or 6 miles long 775 ft. fall can be obtained. This fall is 40 miles from Malayatur or Alwaye or nearly 50 miles from the coast. Five miles above the falls is the Iddikki gorge on the Periyar. At the gorge the river is not more than 100 ft. wide and the sides are more than 100 feet high in vertical rock. This provides an ideal site for a Dam. But it will be seen that with only a leading channel and without storage 10,000 horse-power can be developed and the Karimbankuthu falls being on the biggest river in Travancore the prospects of further development with storage are more than on any other river in Travancore.”

The Board expressed the opinion that unless a fair payment, capital and annual for the use of the water in the Madras Presidency is assured, the Kallar Scheme need not be investigated or in other ways pushed forward. The Board strongly recommends that the Karimbankuthu falls be further investigated by a firm of consulting engineers and that tenders be called to decide on the terms of such an engagement.

At the informal conference on the Kallar project held on the 12th November, it was suggested that pending the negotiations with the Madras authorities a committee consisting of Mr. Kurien, Dr. Kunjan Pillay, the Forest Utilization Officer and the Director of Industries with some business men be appointed to investigate the possibilities of utilizing electric power in the State.

This examination in our opinion is of the greatest importance. It is questionable of the Dewan's opinion “that the supply would create the demand, that a large supply of power would convert the country into an industrial one and that with the construction of the Cochin Harbour a number of industrial concerns were likely to spring up and the power required would be supplied by the project.” This is a reversal of the ordinarily accepted theory of the demand creating the supply. The idea of converting Travancore into an industrial

country, even if that were possible, is not a welcome one. Industrial conditions as far as the mass of the people is concerned are not ideal anywhere and the main industry of the State, agriculture, is more in keeping with the traditions, the instinct and genius of the population. Without agriculture as its main stay industrial development would be futile. We recognise that industrial enterprise should supplement the earning power and promote the prosperity of Travancore, but to convert an agricultural country like Travancore into an industrial country—that way ruin lies. Besides, there is a deplorable absence of wealth in the country to admit of extensive industrial activity. For a community of landlords the inevitable result would be a nation of coolie

labourers, the wealth being in the hands of a few—it is most likely—foreign exploiters.

In conclusion, of the two proposed schemes, the Karimbankuthu appears to be more feasible, less costly, quite adequate to the present needs of the State and capable of further development. If it is possible for a company to investigate, execute and manage the project, it is possible for the Government to do so, and more preferable. Honesty, care in selecting the proper men, meticulously careful supervision and control and competent technical advice and assistance should enable the Government to succeed as well as any company. Haste is to be deprecated till careful investigation affords assurance of success.

Madras Finances.

An important Memorandum by the officiating Accountant-General has been submitted to Government showing the revised estimates of Income and Expenditure for the current year based upon the experience of the first six months, as compared with the Budget Estimate.

It is indicated that the expenditure, apart from loans from the Imperial Government and to local bodies, will exceed the Budget estimate by Rs. 1,60,000. This is the net result of the following alterations:—

INCREASED EXPENDITURE.				Rs.
Police	..	..	..	5,00,000
Medical (chiefly Hospitals and Dispensaries)	..	..	..	3,50,000
Public Health (additional allotments under Grants)	..	..	..	7,60,000
Civil works (chiefly additional contributions)	..	..	..	4,00,000
Stationery and Printing	..	..	..	5,00,000
				<u>25,10,000</u>

SAVINGS.				Rs.
Forests (due to stoppage of exploitation of forests in Malabar)	..	..	..	2,50,000
Miscellaneous Irrigation Expenditure				2,00,000
Education (diminished expenditure on new schemes)	..	..	..	3,50,000
Agriculture and Co-operative Credit (provision for expansion not fully utilized)	..	..	..	4,50,000

	Rs.
Public Works	8,00,000
Construction of Irrigation Works	2,00,000
Waterways and Embankments	1,00,000
	<u>23,50,000</u>

On the other hand it is calculated that the Income, apart from loans, will fall short of the Budget estimate by no less than Rs. 1,13,75,000. This is the result of a falling short indicated under the following heads:—

	Rs.
Excise (chiefly decreases under Toddy and Arrack)	80,00,000
Stamps (due to depression of trade)	13,50,000
Forest (largely due to stoppage of exploitation of forests in Malabar)	9,00,000
Registration	3,50,000
Public works (due to increased working expenses caused by breaches in the Cauvery Delta system)	2,00,000
Miscellaneous (due to adjustments with the Imperial Government on one hand and local bodies on the other)	5,75,000
	<u>11,37,500</u>

All heads of Departments have been instructed to economise to the utmost during the remainder of the current year.

Indian Railway Finance.

Committee's Report.

The following is the report of the Railway Finance Committee which assembled in Calcutta from 5th to 9th December, 1921, under the chairmanship of Mr. Hailey, the Finance Minister:—Pursuant to the resolution passed by the Legislative Assembly on the 13th of September, 1921, the present committee was appointed to consider certain matters arising from the report of the Railway Committee, namely, (1) the separation of railway from general finance, and (2) the requirements of railways in regard to capital expenditure during the next 10 years and to make recommendations.

QUESTION OF SEPARATE FINANCE.

The definite proposals of the Railway Committee in regard to the separation of railway from general finance are contained in paragraphs 74 and 76 of the report. Though the Railway Committee have not entered into any great detail in regard to the methods to be adopted in giving effect to their proposals the main intention is nevertheless clear. There is no suggestion that the railway organization should be independent of the control of the legislature. Its financial transactions would be subject to the same control as those of any other department of Government. There is, however, this important distinction that whereas the arrangements for the financing of all departments have hitherto been considered together, the Railway Committee proposes that railways in respect both of capital and revenue should in future remain apart, that there should be a definite programme of capital expenditure and in consequence a definite programme of borrowing for our railway purposes, and finally that the net profits earned should stand outside the general revenues of the country and ordinarily be either devoted to the provision of additional railway facilities or to the reduction of rates and fares. We feel that so far as capital expenditure is concerned there should be no inherent difficulty in giving effect to the proposal. A separation of budgets does not necessarily mean that the railway administration would raise separate railway loans apart from the general State borrowing, and for our part we recognize that there is much to be said for concentrating all Government borrowing as much as possible. The point of practical importance is whether the State should gua-

rantee to the railways a definite supply of capital funds over a certain period of years. If this were done and the present practice were discontinued under which money provided but not expended in a particular year lapses at the end of that year, the railway administrations would then be able to embark upon a continuous programme of expenditure and to lay their plans in advance with an assurance that funds would be provided. We shall discuss subsequently the case for the provision of a definite programme of this nature. For the present we content ourselves with pointing out that such a programme could be secured without a formal separation of railway from general finance.

THE REAL DIFFICULTY.

The real difficulty of the proposal to separate the entire Railway budget from the general Budget of the Central Government lies in the fact that any separation in the sense suggested by the Railway Committee involves the surrender by the Central Government of railways as a source of revenue. We have accordingly concentrated our attention not so much on the question of principle as on the purely practical question whether any such surrender could be effected at the present time or in the immediate future. The net gain from railways after deducting interest and other indirect charges was in the years 1905-06 to 1919-20 as follows (in lakhs of rupees):—1905-06, Rs. 301 lakhs; 1906-07, 346; 1907-08, 337; 1908-09, 186; 1909-10, 124; 1910-11, 301; 1911-12, 569; 1912-13, 722; 1913-14, 719; 1914-15, 323; 1915-16, 311; 1916-17, 1122; 1917-18, 1487; 1918-19, 1585; 1919-20, 934. The revised estimate for 1920-21 anticipated a net gain of 454 lakhs and the budget figure for 1921-23 provides for 409 lakhs. The last mentioned figure is exclusive of the railway sur-tax which was estimated to produce 6½ crores in the current year. Here again we do not propose to consider the question whether the transfer of the net gains from railways to general revenues was or was not justifiable. For the present it is sufficient to express our definite opinion that in the existing state of Indian finances it would be impracticable to replace this source of revenue if surrendered for railway purposes. It is material to mention here that, when the new financial arrangements

necessitated by the reforms were under consideration, it was assumed that the Central Government would derive a substantial net revenue after paying interest charges from railways. In deciding upon the amount of the Central deficit which would have to be made good initially by contributions from the provinces, Lord Meston's Committee assumed that the Central Government would derive a net revenue of not less than $10\frac{3}{4}$ crores from this source. Apart from other considerations regarding the general financial position, the surrender of this revenue would result in a material disturbance of the financial equilibrium which was assumed when the reforms were inaugurated. It is true that in theory it would be possible to avoid the whole or at all events part of this loss by either raising money from railways by means of a sur-tax or by the fixation of an annual contribution from railways calculated on some suitable basis in aid of general revenues. Here, however we are met by the following difficulties. The circumstances of the last few years have been so abnormal, and the uncertainty regarding the net receipts of the immediate future is so great that it would not be possible to calculate a figure on which any reliance could be placed as the basis of contribution or sur-tax. Again it might be necessary in order to secure adequate compensation to general revenues to fix the composition at such a figure as might make it impossible for the railway administration to discharge its obligation or in the alternative might force the administration to increase freights and fares to an excessively high figure in order to fulfil its contract.

SEPARATION NOT POSSIBLE.

We have therefore been led to the conclusion that separation of railway finance in the sense understood by the railway committee is not at present a practicable proposition. It may be advisable when conditions become more normal and financial equilibrium is re-established to re-examine the question. In doing so it would of course be necessary to discuss certain questions of principle which for the reasons given we have now avoided, such, for example, as the extent, if any, to which general revenues are entitled to benefit from the net profits made by railways, how the capital charges and the liability in respect of interest charges should be assessed, whether any deduction should be made from that capital in respect of strategic railways, how far the control of the Assembly over the budget as a whole would be affected by such separation

and whether the railway administration would be justified in utilizing, indeed whether it would be economically sound to utilize, surplus railway revenues for capital expenditure. We have suggested in a subsequent paragraph (No. 10) the appointment of a committee to consider the capital programme in three years time and the examination of this question might perhaps be usefully undertaken by that committee.

EXPENDITURE ON IMPROVEMENTS.

Coming now to our second head of reference, we have been much impressed by the evidence recorded by the Railway Committee in regard to the need of rehabilitation and improvement of the existing lines. It is clear that the numerous restrictions which it has been necessary to place upon goods traffic, illustrations of which are given in appendix 1 to the Committee's report must be seriously detrimental to internal trade and it has been strongly represented to us that the present incapacity of the railways to meet the needs of the country seriously hampers the development of Indian industries. A single example will suffice. It is a matter of common knowledge that shortage of wagons has checked the development of the coal-fields. In spite of this in 1919 the production of coal in the Bengal and Bihar and Orissa coal-fields outstripped transport facilities by more than $2\frac{1}{4}$ million tons. If this was the position two years ago, it is likely to be much worse a few years hence, unless immediate steps are taken to rehabilitate the railways. The consumption of coal in India has nearly doubled in the last 10 years. With great developments of metallurgical and other industries which may be expected in the near future, the rate of increase is likely to grow rather than to diminish unless, indeed, that development is throttled by the failure of these industries to obtain the coal they require. It is not merely a question of buying more wagons and locomotives; lines must be doubled, bridges strengthened, yards remodelled, and the railways generally fitted to handle more traffic. We are greatly impressed by the wastage in the use of existing rolling stock due to the incapacity of bridges to carry the increased axle loads involved in the use of the newer and heavier types of engines and wagons.

FACILITIES FOR 3RD CLASS PASSENGERS.

Finally the need for a radical increase in the provision of facilities of all kinds for third class passengers is so patent and the demand

of the public on this point is so insistent that the matter requires no further emphasis on our part. We consider, therefore, that the case for the provision of larger capital funds for the immediate rehabilitation and betterment of existing lines is amply proved. It is also in our opinion uneconomical to refuse to the railway administration the funds necessary to complete the works now under construction. These two requirements must in our opinion take precedence of any demands for the construction of new lines.

A FIVE YEARS' PROGRAMME.

'We are also impressed with the necessity for allowing the railway administrations to proceed with the operations of improvement and betterment on a fixed programme. Indeed, we go so far as to say that a guaranteed programme extending over a course of years is almost as important as the provision of larger funds. After full consideration we do not think that it is advisable to contemplate a financial programme of ten years as suggested in our second term of reference. Neither from the financial nor the administrative point of view is it practicable to look so far ahead.

We suggest that the programme should be prepared on a five years' basis the provision for each quinquennial period being considered about two years before the termination of the existing period. The maintenance of such a programme necessarily implies that there should be no lapse of money voted for any one year but not spent within that year. Such sums should be carried on to the credit of the railway administration up to the limit of total amount fixed for the quinquennium. The financial programme should be strictly adhered to it being understood however that a war or other unforeseen contingency radically disturbing the money markets might render it necessary to curtail the operations in any one year. In considering the extent of the programme we have been obliged to take account of two considerations: (1) the actual needs of open lines for rehabilitation and improvement as shown by the forecasts prepared by the agents, and (2) the commitments of Government in regard to other capital liabilities and the probable capacity of the money markets to supply the necessary loan funds. In regard to the first, the forecasts of the agents have been prepared on a ten years' basis and have not yet been fully scrutinized by the Railway Board. We do not therefore attach great importance to the details of these forecasts and place more

weight on an appreciation prepared by the Railway Board of the minimum requirements of open lines for the next five years. These are as follows:—(1) wagons 48½ crores, (2) coaching 18 crores, (3) engines 30 crores, (4) strengthening track and bridges 10 crores, (5) doubling lines 12½ crores, (6) yard and station facilities 20 crores, (7) workshops 10 crores, total 149 crores. In addition expenditure will be required for the completion of new lines now in progress, the estimated further expenditure on which is 491 lakhs, or on such items as quarters for the staff. As regards the second point, we have taken account of the capital commitment which will fall upon the Government in regard to the repayment of loans maturing during the next five years and also of the demands which are likely to fall upon the money markets in respect of new funds which must be raised by the central and provincial governments for irrigation and other schemes, such as the Bombay development. We have also borne in mind the problems which confront Government in respect of the large amount of floating debt outstanding in the shape of treasury bills and also as regards the position of its older securities. After weighing all the factors involved, we consider that funds to the extent of 150 crores should be devoted to railway capital purposes during the next five years. In placing their case before us the Railway Board asked for a minimum expenditure of 30 crores a year for the next five years and the conclusion at which we have arrived after considering the financial issues to which we have referred above is that we should be justified in recommending that funds should be provided to this extent. We recognize that the provision of funds of this amount may involve our supplementing our Indian loans by outside borrowing and we are prepared to support action in this direction, provided that such borrowings are effected in the cheapest market. We desire to state our opinion that immediate steps should be taken by the Railway Board to obtain a five-year revised programme from agents which after scrutiny by the Board should be available for the information of the Legislative Assembly. We would add that in issuing instructions with this object the Railway Board should lay paramount stress on the improvement of the conditions of travel of third class passengers.

NO PROVISION FOR NEW LINES.

As already stated we are not at present able to contemplate the insertion in the

programme of any provision for new lines. At the same time we are aware that in order to improve the present coal position it is necessary to construct certain feeder lines which though they involve no great mileage would nevertheless have the result of opening up new coal-fields if possible by direct borrowing. We should have preferred to recommend that these lines which are in our opinion urgently required should be directly financed by the State. Failing this, we consider that Government would be justified in encouraging the construction of such lines by private enterprise.

STATE *vs.* COMPANY MANAGEMENT.

'In coming to this decision we do not desire to commit ourselves to any opinion on the larger question of State *versus* Company management. The point is not indeed within our terms of reference. The general policy of securing a development of new areas on branch lines will have to be considered in connection with that question. In the meanwhile we consider that such questions as it may be necessary to offer for the construction of the lines now urgently required should be accompanied *inter alia* with the following conditions:—(1) that the guarantee should be given only to companies domiciled in India with a substantial Indian element in their directorate and raising only rupee capital, (2) should such companies work their own lines, they should engage to apply the same rules as have been or may be laid down for the proportion of Indians to be employed in the higher ranks of the State railways establishment.

In the preceding paragraphs 7 to 12, we have considered the capital requirements of railways in regard to rehabilitation and improvements as indicated in our second term of reference but we recognize that the question of rehabilitation necessarily involves also a consideration of the expenditure on such renewals and repairs as under the present accounts system falls on the revenue budget. We consider that the present method of providing for depreciation not by a proper depreciation fund but by allotting each year a grant from revenue for expenditure on renewals and replacements is open to many objections. We therefore recommend that early steps should be taken to calculate the parts of depreciation which should be allowed for the various classes of railway plant and material in order that the recurrence of the deterioration which has taken

place in recent years may be avoided and depreciation for renewals and repairs provided for automatically.

Our colleague Mr. Mazumdar, M.L.A., was unfortunately unable to attend a number of our meetings but is prepared to concur in our report. The Hon. Sardar Jogendra Singh was unable to attend the deliberations of the Committee.

The Report is signed by the following: W. M. Hailey, C. A. Innes, W. D. Waghorn, Ramsaran Dass, Alex. R. Murray, A. H. Froom, N. M. Samarth, T. Rangachariar, Phiroze C. Sethna, Iswar Saran, H. S. Gour, Abul Kasem, Jadunath Mazoomdar, S. M. Ismail, E. M. Cook, Vithaldas D. Thackersey.'

A special series of Reports is being published for the Department of Scientific and Industrial Research in order to make available for the benefit of the industries concerned results of scientific and industrial value contained in the Technical Records of the Department of Explosives Supply of the Ministry of Munitions. The work recorded was done at or in connexion with some of the National Factories during the war. The preparation of the necessary abstracts and information was begun by the Ministry of Munitions at the close of the war and arrangements have recently been made by the Department of Scientific and Industrial Research to complete them. The first Report in this series, "Recovery of Sulphuric and Nitric Acids from Acids used in the Manufacture of Explosives, Denitration and Absorption," has already been published by H. M. Stationery Office, from whom copies may be obtained, price 12-6 (by post 13). The present Report "Manufacture of Trinitrotoluene (TNT) and its Intermediate Products" is divided into the following sections:—Section I.—History of Manufacture. Section II.—Plant and Process for the Manufacture of TNT. Section III.—Plant and Process for the manufacture of 2: 4—Dinitrotoluene.

An exhibition will be held in Singapore on the occasion of the visit of the Prince of Wales, the object being to stimulate a revival in trade. The exhibition will be open from March 31 to April 8, 1922, and will be held under the auspices of the Governments of British Malaya, Borneo, and Sarawak; it will include sections for commerce, mines, agriculture etc

New Power Station at Runcorn.

By Mark Meredith, M.E.A., M.I.S.A.

The large new super-power station of the Mersey Power Company, a subsidiary company of the Salt Union, Ltd., was opened recently at Runcorn.

In these days of trade depression and of social anxiety and perplexity it is refreshing to be associated with a concern which is in the happy position of adding to the production of a commodity for which the demand is in excess of the supply through Great Britain, for it is now generally recognized that a supply of cheap power is a vital necessity to most of the British industries, if they are to survive in the world competition to which they are subjected. There is perhaps a tendency to attribute too great importance to electricity as the one and only thing needful to bring about a revival of trade: but it is nevertheless bound to play a decisive part in any such revival, always provided that it is not hampered by unwise legislative interference, and of this there is still a considerable risk.

The Mersey Power Company was started in 1911, the electricity being produced at the Salt Union's power station near by, in conjunction with salt-making by the vacuum process. This twin production is a veritable romance of the industry, whereby salt may be said to be a by-product of electricity, or electricity a by-product of salt. In other words, the high pressure of steam raised in the boilers first used to produce electricity and secondly, the exhaust steam from the turbine, at low pressure, is just what is wanted to boil the brine in vacuo, and so produce salt. For the initiations of this wonderful combination the Company are indebted to their engineer and managing director. The electricity so created sufficed for the requirements for the works and the surrounding district until the war came along, when the Government strongly pressed for the increase of plant in order to supply chemical works that were making explosives, etc. The Company agreed ultimately to do this, subject to the Government providing a large part of the further necessary capital. Unfortunately, a long term of delay occurred on the part of the Government coming to terms, and this was further aggravated by labour troubles, which did a vast amount of harm in cessations of work, etc. Hence the time occupied has amounted to four years from the commercial negotiations, and the actual time occupied in the construction was two and a quarter years, whereas half that period ought to have sufficed.

The Company sold its first unit in 1911. In 1912 the sales amounted to 1,500,000 units. In 1920 they reached 24,000,000 units. The generating plant was capable of turning out 3,750 k.w. whereas in 1921 the capacity is 34,750 k.w. The mains laid extend for over 120 miles. The cost of Percival lane station has amounted to £425,000 this including cables. The equipment of the stations consists of two turbo-generators supplied by Messrs. C. A. Parsons & Co., each of which is rated for a continuous output of 12,500 k.w. The turbines revolve at 3,000 r.p.m., generating S—phase current at 6,600 volts. Steam is provided at the turbine stop valve at 250 lbs. per square inch atmosphere, and superheated to 650 degrees F. The condensers were supplied by Messrs. G. & J. Weir each turbine exhausting into twin condensers, the quantity of cooling water necessary per hour being 3,650 tons. The water is taken from the Manchester ship Canal.

The boiler plant consists of three Babcock and Wilcox water tube boilers, with economisers, superheaters, and chain grate stokers. Each boiler evaporated a minimum of 45,000 lbs. of water per hour, and will burn about 3 tons of coal per hour. The grate area of each boiler is practically 300 square feet. A space in the boiler house is available for a fourth boiler.

The supply of current to Runcorn and Windnes is 6,600 volts with sub-stations reducing the pressure to 440 volts at convenient centres. The supply of Ellesmere Port which has just commenced is carried out at 33,000 volts through step-up transformers in the open air, just outside the station.

The situation of the station has been well chosen. It is in the midst of a prosperous manufacturing centre and in which many different kinds of industries are carried on.

The cost of production will be low. The station, which is the last work in design and finish excellent rail facilities for an abundant supply of coal and what is perhaps more important still, they have practically an unlimited supply of cold water for condensing purposes.

Its financial prosperity must, of course, depend on the state of general trade throughout the district, and while a far from optimistic view is taken of the future it is felt sure that those manufacturers who continue to produce will require to use electricity in some form or other and thus will keep the station busy.

U. P. Industries Department.

In the following Resolution on the Report of the Director of Industries' United Provinces for the year 1920-21, issued by the U.P. Government we read:—The report of the Director of Industries for 1919-20 dealt with the early phase of the post-war period during which the chief difficulties in the way of the industrialist were the delay in obtaining machinery and the restriction of the coal supply owing to the shortage of wagons. The large surplus of supplies in Europe and America and the chaotic state of the finances of several European countries combined to check the foreign demand for the products of India.

During the year 1920-21 which is covered by the report now under review, the difficulties of obtaining machinery, railway transport and coal persisted. In addition, the dramatic rise and fall in the exchange value of the rupee helped further to disturb the normal current of trade which had not yet recovered from the effects of the war. The 100 per cent rise in the exchange value of the rupee led to wild speculation, in the form of orders for foreign goods in quantity out of all proportion to the probable demand on the part of the Indian consumer. The equally dramatic fall of the rupee, which occurred before the bulk of these orders had been delivered or paid for, proved still more upsetting to the trade of the country. In addition to these economic troubles the autumn of 1920 heralded the beginning of an unprecedented trade slump throughout Europe, which still further restricted the European demand for Indian products, raw or manufactured. These various causes, of which perhaps the most important in the United Provinces has been the shortage of railway wagons required for the carriage of both raw materials and finished products, have made the past year one of small prosperity for most industrialists in the province.

There are, however, signs that the trade depression which has prevailed throughout the world for the greater part of the year under review is passing and that, with the deflation of prices and wages, the return of prosperity may be looked for. The great danger for the United Provinces is that the organized unrest of the labouring classes, which is being sedulously fostered by extremist agitators throughout the world and which has caused numerous strikes in Southern India, may spread to this province. So far the United Provinces have been comparatively

free, it is but necessary to recognize that we cannot expect to be more fortunate than our neighbours. During the past cold weather the Government of Bombay secured the services and advice of Mr. McLeod, President of the Industrial Court in England and one of the leading authorities on the settlement and prevention of labour troubles. An officer was deputed from the United Provinces to visit Bombay and to study Mr. McLeod's methods. His recommendation that a special Labour Bureau should be started with a Labour Commissioner at its head whose duty would be to deal with strikes and other labour troubles appears to be premature, so far as the United Provinces are concerned; but the Board of Industries have recently approved the proposal to establish a Conciliation Board to deal with strikes. The Government have agreed to co-operate with the Government of India in carrying out a census of wages drawn by operatives in all the principal industries and in making out a cost of living index, which will show the actual cost of living in the different grades of that class for which is commonly, if inaccurately, reserved the title of "the working classes". These figures will enable the Government and the public at large to form a rapid and fairly accurate opinion in the case of any particular strike whether the strikers are being adequately or inadequately paid.

The Government note with pleasure the cordial thanks which the Director expresses to the members of the Board of Industries, and desire also to thank the members for the great help that they have rendered to the Government and to the industrial advancement of the province by giving the Director the benefit of their expert opinion. The Government have revised the constitution of the Board, the main alteration being the grant of three seats to members of the Legislative Council elected by the non-official members of that body. The Government have further increased the power of the Board by placing at its disposal a suitable sum each year to be expended at the discretion of the Board on assistance to young and struggling industries. The Board is now composed of seven Government officials, a representative of the railway companies and ten non-officials. In the case of the various advisory committees of the Government technical institutions, it has similarly been decided to increase the non-

official element and, where possible, to appoint a non-official chairman. The Government recognize that it is only by increasing the responsibility of non-officials that they can justly expect real interest to be awakened. They notice with regret in the Director's report that the advisory bodies of some of these schools appear to have done very little during the past year. More frequent meetings of the committees should be held and more matters pertaining to the schools should be placed before them, in order to create more interest.

During the year under report the Government considered the question of expanding the Chemical Research Institute into a Technological Institute where students can be taught the technology of oil chemistry, leather chemistry and tinctorial chemistry. A committee of experts has advised the Government, and in accordance with their advice the Government propose to build a Technological Institute where students will be taught the elements of engineering and the chemistry of their particular subject and at the same time will receive practical training on a factory scale in the subject which they are studying. As the Director points out in his report, this scheme was originally outlined 14 years ago by the Naini Tal Industrial Conference of which Sir Harcourt Butler was the Secretary. The scheme is now on the verge of fulfilment and will, the Government believe, prove a most important factor in the development of the industrial future of this province. Side by side with this scheme, the Government propose to rebuild and expand the present Technical School at Lucknow into a school for mechanical and electrical engineers provided with the latest equipment. Another committee of experts has recently submitted a report to Government on the training which should be given to pupils at the latter institution. The present site of the Lucknow Technical School is too cramped and small for the proposed institution which will be removed a short way outside the city, but within easy reach of the Oudh and Rohilkund Railway workshops, at which it is proposed to give our students practical training.

The technical schools, both Government and subsidized, have continued to do excellent work during the year. Passed pupils have in nearly all cases readily found employment in commercial firms or been able to start their own business. In fact the difficulty is not to find work for pupils, but to prevent them from leaving school with their education

half finished, bribed with the offer of high wages from commercial firms. This difficulty can to some extent be overcome by the offer of stipends to the pupils of our technical schools; but those who are poor and have families to maintain find it difficult to resist the offer of immediate wages.

Complaints are heard from time to time that the results of the schools have been less satisfactory than might have been justifiably expected in view of the expenditure upon them. Government will remedy defects that it is in their power to rectify, but the chief reason of disappointment is that the most intelligent of our young men do not as a rule take to technical and industrial education. Here the remedy obviously lies with the pupils themselves.

The Director in his report has discussed at length the various industries of the province and the steps which he considers necessary to help them. The Government are fully alive to the importance of helping struggling industries, of training up young men in technical schools and of sending promising scholars abroad to learn new industries. An important preliminary step is to obtain an up-to-date survey of the industries of the province. At present we possess nothing later than the survey made by Mr. Chatterjee in 1907. Government have therefore appointed ten divisional superintendents of industries, one for each division, whose duty it will be to carry out a complete survey of the industries of the province; to report the difficulties of different industries to the Director and to assist small industries with advice wherever they can. They will work under the immediate supervision of Deputy Director of Industries. If these appointments prove useful, it is intended to make them permanent.

The year under review has not been a profitable one either for the leather industries or the glass industry. The general trade depression affected both. In the case of glass, the local manufacturers had to contend with shortage of wagons for transport both of their coal and of their finished articles. In fact, some furnaces had to be closed down owing to lack of coal. The Director made strong representations to the Coal Transportation Officer on behalf of the glass factories and other factories in the province, but the fact remains that at first there were not enough wagons to transport the coal and then there was not enough coal to satisfy all industrial needs. This shortage has not been confined to India but has been seriously affecting trade in Europe

during the past year. It is to be hoped that the Bengal coal-fields will find in the near future some means to improve their supplies. This Government brought to the notice of the Government of India the paralyzing effect on trade caused by the shortage of coal. It is, however, possible that good may come out of evil, and that this shortage of coal will accelerate the advent of hydro-electric power stations which will furnish power at far cheaper rates than can be done by coal.

The Director has discussed at length the question of extending the industry of hand-loom weaving and quotes figures to show that there is not enough yarn to give whole-time occupation to an appreciable section of the public. He urges however that there is still room for encouraging hand-loom weaving and spinning as a subsidiary occupation for the families of artisans or cultivators. Efforts have been made by the weaving experts of the Industries department to simplify the preliminary processes of weaving, and to ensure quick and uniform hand-weaving. An improved machine has been made in the Central Weaving Institute at Benares to weave fancy bordered *saris* and an automatic picking arrangement costing only annas 6 has been invented, to replace the leather picker which used to cost Rs. 3. Efforts also have been made to make a cheap and efficient substitute for the imported shuttle. At present Government have two types of weaving schools, one permanent and the other peripatetic. The advantage claimed for the peripatetic school is that it can visit several places in the year and attract the local weavers who are not prepared to leave their homes and attend a permanent school a long distance away. The disadvantage of the peripatetic school is that it does not stay long enough in one place to train pupils who are not professional weavers. The Government appointed a strong committee under the Registrar of Co-operative Credit Societies, to advise as to the future management of these weaving schools. Their report has recently been received and is under consideration.

The Director mentions in his report various subjects in which other departments, notably the Agricultural and Forest departments, are concerned as closely as his own. The ordinary business man finds it inconvenient when he desires the advice of Government, to be referred from one department to another for information on different points. This question of over-lapping was considered by the Industrial Conference of Ministers

and Directors of Industries who met at Simla in May last. The solution arrived at by this Government has been to appoint a Development Board, comprising heads of the various Development departments and the Presidents of the different Development Boards. The work of this Board will be to ensure the harmonious co-operation of the different departments, and to see that the industrialist who desires advice will not be driven from department to department. Several questions raised by the Director in his report have been dealt with by his Development Board and the lines of policy decided.

The educational section of the Director's report shows that the principals of schools have for the most part continued to do excellent work. Particular praise is due to the Principal of the Allahabad Carpentry School, who in two years has converted his school into one of the most successful and popular technical institutions in the province. Government hope, before long, to give the school a building worthier of the good work that it is doing.

The emporium attached to the School of Arts and Crafts at Lucknow has continued its successful career under Mr. Heard. For the second year in succession Mr. Heard attended the British Industries Fair in London with a large collection of the best examples of the arts and crafts of the province, and despite the severe trade depression in England placed orders and sold goods to a total value of £2,596. It is to be hoped that these goods which are the products of our provincial industries will obtain each year a larger demand in the European market.

The Governor acting with his Ministers wishes to express his thanks to Messrs. Swinchart and Mehta who were in charge of the department for the first and second half respectively of the year under report, and to the other officials and non-officials whose good work has been mentioned in Mr. Mehta's report.

Another Customs Conference is to be held in the West Indies, at the suggestion of the Government of British Guiana, to give consideration to a draft Customs ordinance and regulations prepared as a result of the Conference held in Trinidad more than a year ago, and also to discuss the subject of the certificates of origin to be demanded in the case of goods for which preferential treatment is claimed.

The Madras Government Fish Cannery.

The Director of Fisheries having reported that the Government Cannery, which during four years of war made a profit of Rs. 15,742 has incurred losses during the last two years, the Madras Government have passed the orders (No. 1897, Development, dated 11th October 21.) The Government have considered the various suggestions put forward by the Director as to what the scope and aim of the Government cannery should be. They have decided against the alternative of giving up the canning enterprize altogether and selling the existing cannery as a going concern, and are also averse to running two factories, one as a commercial factory and the other as a demonstration factory. The Government consider that the department should have one cannery managed on strictly commercial lines and designed to return a regular profit on the capital. This point of view has recently been discussed in the Government Order relating to the Calicut Soap Factory and the same considerations are equally applicable to the cannery. The principal object of the Government is not the making of large profits, but without demonstrating the possibility not only of canning fish but of earning a regular dividend on the capital employed the Government consider that the right kind of private enterprize is unlikely to be attracted into similar ventures. On the above point the Government are in full agreement with the views expressed by the Director. The factory should also train students in the practical canning of fish, the number to be admitted being as large as is compatible with the commercial management of the concern. The Government agree with the Director of Fisheries that Beypore has proved unsuitable for the permanent location of such a cannery owing to its inadequate and irregular supplies of Fish and its comparative inaccessibility. A factory in a large town on the railway would itself constitute a good advertisement for the sale of the goods, and a much better inducement to private persons to take up similar enterprize. The existing buildings are also rather inadequate for production on a bigger scale and inadequate even now for proper storage. The Government therefore agree that the cannery should be removed from Beypore to a sufficiently central place on the railway. The question will be finally decided after the approaching visit to the West Coast of the Hon'ble Minister for Development. In

the meantime the Director is requested to collect all the necessary data which will help the Hon'ble Minister to arrive at a final decision.

It has been suggested in this connection that the cannery ought to be run side by side with an experimental fish curing yard and an oil and guano factory, the idea being that it is cheaper and easier to buy large catches of fish as they come in, select the best for canning purposes, the next best for curing or smoking and the inferior part for conversion into oil and fish guano. It is believed however that the manufacture of fish guano is an insanitary process and that a considerable distance ought to intervene between a fish cannery and the nearest fish guano factory. The Director is requested to investigate these points and take them into consideration in recommending a suitable site. It is presumed that with better factory management it should be possible to extend the use of the solderless plant now in use side by side with the soldering method and to abandon the latter altogether. The Director is requested to report on the point.

The Government agree with the Director that the sales work of the cannery needs far more attention than it receives at present. It is understood that over one year's stock of canned goods is on hand and that for the last two years there has been a distinct falling off in customers. It is also believed that with one or two exceptions the cannery has no selling agents and is attempting to manage not only the manufacture but the business of retail trade carried on directly with small consumers. It is probable that this system, which had a temporary success during the war, is unsuited to post-war conditions. Certainly it has not of late given good results.

The Director attributes the difficulty about selling the output very largely to the small scale on which the factory is conducted. Doubtless it is impossible, as the Director points out, to secure the services of large scale firms unless these can be assured of a far larger and a more regular supply than is at present possible. It does not however seem desirable to continue unchanged the unsatisfactory system described by him until the new factory is erected and a larger output is assured. This would mean that the cannery would have to embark on its larger output without any assurance of finding purchasers and possibly

also with accumulations of unsold tins. The Director is requested to enquire whether agents cannot be found who are prepared to undertake the selling business of the cannery, both within and outside the Madras Presidency, on a scale suitable to the present small production.

It is also suggested that some effort might be made by the ordinary business methods, trade circulars, free samples and the like, to attract the attention of groups of consumers, *e.g.*, clubs and military messes. This might prove more profitable than the present method of dealing direct with individual consumers.

Concrete Cottages.

Now that cheap building is a necessity the following description of two methods of rapid concrete cottage construction as used in the erection of large housing schemes in the United States will be found interesting by those engaged in housing schemes.

The houses at Youngstown, Ohio, are of precast units, except for 8 inches footings cast in place. The units are reinforced to sustain the loads in the structure and to withstand the strains in lifting, loading, and placing. Exterior wall slabs are of ribbed design. They are usually of story height and of a length equal to a room or entire side wall dimension. They are rabbeted at the ends so that the adjacent slabs as set provide a space for filling with grout. The slabs are cast with the outside down. Ribs, giving a total maximum wall thickness of 7 inches are formed by boards set in the slab forms. The panels between have a thickness of 3 inches. Furring strips, asphalt painted on the back side, are anchored by nails to ribs when the slab is cast. Partition walls are hollow, the vertical coring being provided by means of form boxes set in the slab forms as the concrete is poured. These are afterwards withdrawn, the spaces filled with sand, and the face of the slab is trowelled. Sand is removed later by washing with a hose.

Floor slabs are beamed, the central panels being 2½ inches thick. These are cast ceiling side down over well-finished wood cores designed to give a moulded trim around the edge of each panel adjacent to the beams. Floor slabs are so rabbeted at the outer edge as to fit over the wall slabs, thus anchoring the work. Window and door openings are rabbeted and provided with wood nailing block cast in. Sills are separately cast in order to get a better finish. All rooms used for living purposes are fire-proof. The roofs are sloping and covered with red tiles.

At Phillipsburg, New Jersey, 100 houses

are being built on the system illustrated for the Ingersoll-Rand Co. The walls, interior partitions, floors and roof are of solid concrete poured at one time, and each house is poured in eight hours. The electrical conduits and water piping are assembled complete in the moulds before pouring. The walls are solid 6 inches thick, reinforced with small steel rods and finished with a cast of stucco dashed or sprayed on with a stiff brush. This covers any form marks or inequalities in texture of the poured concrete, and at the same time offers a means for varying the appearance of the houses. The outside walls have their interior surface furred, lathed with wall board and plastered. This furnishes a "dead" air space and prevents dampness from condensation. Both first and second floors are of solid concrete poured in one piece with the walls and partitions. The concrete floor slab is 3½ inches thick supported by small concrete beams, both reinforced and thus forming a self-supporting system.

In order to obtain a floor surface upon which carpet may be tacked or rugs used, an ordinary wood floor nailed to wood sleepers is laid on the concrete slab. The bathroom floor is an exception, the smooth finished concrete slab forming a sanitary and waterproof floor, the slope to drain off the water. Parapet walls, together with wide eaves, serve to conceal the flat roof, which is covered with waterproof paint. Window frames and door frames are placed in the moulds before pouring concrete so that window casings, jambs, trim, etc., can be nailed directly to the frames. The forms used in building these houses are of wood, and may be used several times before destruction. Six room houses of this type are heated by a pipeless heater in the cellar.

Atlas white Portland cement was used for stucco work on the houses.

Co-operation in Bombay.

The following Resolution by the Government of Bombay reviewing the annual report on the working of Co-operative Societies in the Bombay Presidency for 1920-21, is published for general information:—

The Registrar has submitted an interesting and instructive report with the greater part of which the Government of Bombay are in entire agreement. In particular they share the Registrar's regret that so wholesome a movement as that towards Economic Co-operation should have been hampered by the results of political propaganda. It cannot be too strongly insisted on to those responsible by their teaching for the weakening of habits of discipline, that the effects will be felt in directions which it may be presumed they neither expect nor desire. As the Registrar points out, there are unhappily indications of such a result in the history of the co-operative movement. During the year the spirit of solidarity and of neighbourly help which it is the first object of the movement to promote has been in certain cases undermined. The result in Ahmedabad is especially to be deplored. Government believe, however, that the consequences have only to be pointed out for all true friends of the movement to rally to it; and the report shows that there are many such friends.

A scheme for the co-ordination of the Agriculture and Co-operative Departments is published separately in a Press Note and Government trust that this development combined with the association of non-official help will result in the more vigorous progress of both the Departments.

The Registrar has rightly drawn attention to the large increase in overdues. The bad season was no doubt largely responsible, but it is also a matter for consideration whether it may not also be due to the inadequacy of timely finance from co-operative institutions and the fact of indebtedness to *sahucars*. While every attention must be paid to the expansion and progress of the movement, its consolidation and freedom from the evil influence of the *sahucar* must be kept in view. To this end the redemption of old debts in selected societies should be useful.

It is to be hoped that with the revised bye-laws the Guaranteeing Unions will show a more lively interest in supervision and organization. It is satisfactory that the expenditure of Unions on supervision this year

shows a commendable increase over last year. Government cannot too strongly insist on the necessity of closer supervision and more intimate contact of the lenders and the Guarantors with the borrowing societies. The stability of the fabric must depend on this and a definite policy towards this end must be pursued with Central Banks, no less than with Unions.

The progress of Agricultural Societies on its non-credit side, purchase, sale, etc., is disappointing and it is for consideration whether the Unions and Societies should not be helped by business-like Central Agencies to guide them in trade matters and put them in touch with commercial markets. A development in this direction is clearly desirable and its benefits are sure to be appreciated by the Societies.

The growth in the use of cheques is a welcome sign of progress. In a country where banking facilities are so deficient there is an open field for co-operative banking institutions. The Registrar is perfectly correct in insisting upon the need of great caution and all efforts should be made towards training the staff in the principles and practice of banking and in the routine of the employment of credit instruments.

The various recommendations, which the Registrar mentions in the body of his report, are under the consideration of Government and orders will issue shortly.

The Registrar and all those connected with his department are to be congratulated on what in spite of difficulties has been a successful and sound year's work.

A company with £30,000 of British capital is being formed in Perth to exploit the waters of the north-west coast of Western Australia for green-backed turtles. The turtles abound in large numbers, and works will be erected by the company near Fremantle to manufacture soup for canning and also to can the flesh, for which there is a keen demand at Singapore and in the adjacent islands. An exclusive license will be issued to the company to catch the green-backed turtle, and legislation has been introduced with a view to enabling it also to catch hawk's-bill turtles, dugong, and *beche-de-mer* (trepang). The present Fisheries Act does not permit the issue of licenses to catch the three species mentioned.

The British Industries Fair, 1922.

The eighth annual British Industries Fair, organized by the Department of Overseas Trade, will be held concurrently at the White City, Shepherd's Bush, London, and at the Castle Bromwich Aerodrome, Birmingham, from the 27th February to the 10th March 1922, and it is hoped that there will be a large attendance of buyers from India.

Since its inception in 1915 the British Industries Fair has grown until it is to-day the most important national trade fair in the world. In fact, one of the greatest difficulties with which the organizers have had to contend has been the lack of adequate buildings, for the Fair has grown to such an extent that it has been no easy matter to adhere to the policy of housing each section under one roof. To those who are familiar with the continental fairs which are held in innumerable separate buildings scattered throughout the length and breadth of a city, the advantages of such an arrangement will be obvious. For the 1922 Fair it has fortunately been possible to secure enough additional accommodation both in London and Birmingham to provide not only for the annual growth of the Fair, but also to find room for the great industries which have hitherto been exhibited at Glasgow. Textiles will, however, not be included in the 1922 Fair. This concentration will save the visitor unnecessary travelling, and at the same time there is every indication that the resulting advantages will prove a great incentive to British manufacturers of the trades affected to exhibit, so that a more representative display of goods will result.

The London Section of the Fair will, as in 1921, be housed in the White City, an enormous range of exhibition buildings within a few minutes of the centre of London, and connected with every part of the London area by trains, omnibuses and trams, while the Birmingham Section will again be in the great buildings of the Castle Bromwich Aerodrome, which may now be regarded as permanent Exhibition Buildings, within easy reach of the centre of the city.

Not only are both sections of the Fair, in London and Birmingham, in each instance under one roof, but it has been found possible so to arrange matters that the various trades are themselves in separate but adjoining buildings, with the result that the buyer need not waste time wandering through section after section which does not interest him.

The careful grouping of exhibitors according to their various trades is of the greatest help to the buyer, as he finds side by side with well-known firms businesses of which he has probably never heard, but which are of equal interest. To the trade buyer new sources of supply are as important as are new markets for a manufacturer.

Another great advantage enjoyed by the buyer who visits the British Industries Fair is the fact that participation in it is confined to manufacturers. There is, therefore, no duplication and no confusion caused by finding identical articles unnecessarily repeated at different prices on different stands. This does not mean that merchants do not do business in connection with the Fair, for many exhibitors prefer to pass orders, particularly those for export, through merchant houses who have special facilities for handling them. None the less, from the buyer's point of view, the Fair has the great advantage that he comes into personal contact with the actual producer.

THE EXHIBITS.

At the London Fair, the detailed organization of which is entirely in the hands of the Department of the Overseas Trade, the following articles will be exhibited:—

- Cutlery.
- Silver and electro-plate.
- Jewellery, watches and clocks.
- Hard haberdashery.
- Glassware of all descriptions.
- China, earthenware and stoneware.
- Paper.
- Stationery and stationers' sundries and office appliances.
- Printing.
- Books.
- Fancy goods, including travelling requisites and tobacconists' sundries.
- Boots and shoes and shoe mercery.
- Leather for the boot and shoe, fancy goods, book-binding and upholstery trades.
- Brushes and brooms.
- Toys and games.
- Sports goods (including sports clothing).
- Scientific and optical instruments.
- Medical and surgical instruments and appliances.
- Spectacle ware and opticians' supplies.
- Photographic and cinematographic apparatus and requisites.
- Musical Instruments.

Furniture of wood, cane and wicker.

Bedsteads and bedding.

Carpets, linoleum, etc.

Basketware.

Chemicals, light and heavy.

Domestic chemical products.

Drugs and Druggists' sundries.

Perfumery.

Dyes.

Foodstuffs (prepared and preserved) and beverages.

Confectionery (sugar and chocolate).

Tobacco, cigarettes and cigars.

The Birmingham Fair is being organized by the Birmingham Municipality and Chamber of Commerce, with the support and under the auspices of the Board of Trade, and will include exhibits from the following trades:—

Lighting plant for electricity, gas, oil, etc.

Cooking stoves and utensils, including aluminium, enamelware, etc.

Foundry appliances.

General Hardware, including builders' marine and household ironmongery of all descriptions.

General machinery of all descriptions and small tools.

Mill furnishing.

India rubber goods for industrial and household purposes.

Motor-cycles and cycles.

Accessories for motor cars, cycles and aeroplanes.

Weighing and measuring appliances and instruments.

Sanitary appliances.

Paints, colours and varnishes and painters' requisites.

Railway equipment.

Metals of all descriptions (excluding precious metals).

Agricultural and horticultural machinery and implements.

Mining, colliery and quarrying plant.

Brewing and distilling plant.

Metal furniture for house, shop, office, garden and camp use, including bedsteads.

Building construction.

Perambulators, mailcarts and push-chairs.

Saddlery and harness.

Firearms.

Fishing rods and tackle.

Tubes in copper, lead, brass and steel and steam and pipe fittings.

Architectural and ornamental metal work, including gates and fencing.

Ropes of steel and hemp, cordage and string.

FACILITIES FOR OVERSEAS BUYERS.

It should be emphasised that the British

Industries Fair is purely a trade fair, and not an exhibition. Admittance is restricted to trade buyers with the result that all who visit the Fair are known by the exhibitors to be men who are there for business and not from mere curiosity. Exhibitors are, therefore, able to give adequate attention to the buyer and the buyer is able to do his business unhampered by crowds of sightseers.

In organizing the Fair the Department pays particular attention to the comfort and convenience of the foreign buyer. A special club is provided for him, where reading and writing rooms are available, where the gratuitous services of interpreters are placed at his disposal, and where he may consult specially qualified officers of the Department of Overseas Trade, who will be able to assist in indicating the sources of supply of any goods required and to give information regarding tariffs, shipping and transport, trade conditions, etc., etc., throughout the world. Last, but not perhaps least, he will find in the catalogue which is given to him a mine of information, for it is not merely a list of exhibitors but a book of reference of considerable value. It contains, among other things, a comprehensive index translated into seven foreign languages, thus ensuring that practically every foreign visitor shall be able to find readily each exhibitor of the class of goods which he requires.

In a word, the functions of the British Industries Fair are to bring buyer and seller together, and to facilitate business between them by every legitimate means.

It is obvious that the promotion of a successful trade fair cannot be achieved by good organization alone, for the latter is, after all, of minor importance in comparison with the quality and price of the goods shown. Much as the organizers in London and Birmingham pride themselves on the convenience and completeness of their arrangements, they congratulate themselves still more on the support and assistance which they receive from British manufacturers. In both centres the management enjoys the advice of Committees which include the names of prominent business men known all over the world. Busy men as they are, they yet devote much time and thought to the perfection of the British Industries Fair, in which they recognize such an admirable and up-to-date method of extending British trade.

VISITORS FROM INDIA.

Trade Buyers from India who may wish to visit the Fair should apply as early as possible

to His Majesty's Senior Trade Commissioner in India, Post Box 683, Calcutta, who will be glad to furnish them with further information and will supply cards of invitation. On their arrival in England it would be to their advantage to communicate at once with the Secretary,

British Industries Fair, 35, Old Queen Street, London, S.W.1, or, should the Fair have commenced, at the White City, Shepherd's Bush, London, W.14. The Secretary of the Birmingham Fair should be addressed at the Chamber of Commerce, 95, New Street, Birmingham.

A University for Cawnpore.

His Excellency Sir Harcourt Butler presided over an important conference of the representatives of trades and industries and officials and non-officials to consider the question of establishing a University at Cawnpore. Discussions at the conference which was held in the Circuit House at Cawnpore were informal but the following particulars are available for the press from authoritative sources. About 32 were present at the meeting including the Hon. Mr. Chintamani, Minister of Education and Industries. Mr. H. S. Crosthwaite and Mr. E. A. H. Blunt, secretaries to the Government, Dr. Watson and Dr. Annett, Mr. V. N. Mehta, Director of Industries, Mr. G. Clarke, Director of Agriculture, leading members of the two Chambers of Commerce at Cawnpore, including Sir Logie Watson, Sir Thomas Smith, Messrs. C. T. Allen and Gavin Jones (of Upper India Chamber of Commerce) and Rai Bahadur Lala Bishambharnath, Babu Vikramajit Singh, Lala Kamalapat Rai and Lala Sriram Khanna of the U.P. Chamber of Commerce. There were also some members of the United Provinces Boards of Industries and Agriculture and the governing body of the Agricultural College among them being the Hon. Lala Sukhbir Singh, Rai Bahadur Mahshal Singh, Rao Vaidyanath Dass of Benares, leading citizens of Cawnpore including Rai Bahadur Ananda Swarup, Rev. Mr. Douglas and Rai Bahadur Behari Lal were also present.

After an opening speech by His Excellency in the course of which he made a brief statement about the question the Hon. Mr. Chintamani stated the position with regard to the question and explained that Cawnpore possessed the nucleus of a university in the Agricultural College, the Technological Institute which is about to be built and the three arts colleges already established in the City. Asked by Mr. Gavin Jones what new expenditure would be involved Mr. Chintamani replied that a convocation hall, a university library, and

endowments for future expansion would be required. The sum would not be impossibly large and Government were confident that if the project were approved by the leading citizens of Cawnpore they would help Government with their usual generosity to provide the requisite funds.

Babu Vikramajit Singh, the Hon. Lala Sukhbir Singh and Rai Bahadur Ananda Swarup supported the proposal.

Mr. C. T. Allen urged that Government should move slowly. Business men, he said, felt that the need was for trained men who would be useful to the business concerns in northern India and not for superficially educated men with no practical knowledge. The business community should be asked how many students they could take for practical work in their factories.

The Rev. Mr. Douglas also took part in the discussion.

On the suggestion of the Hon. Mr. Chintamani a resolution was unanimously passed for the appointment of a committee to consider the feasibility of establishing a university largely technological in character but also comprising the existing colleges at Cawnpore. The committee will have power to form into sub-committees and to co-opt members to itself or the sub-committees. Sir Logie Watson will be the chairman of the committee, Rai Bahadur Ananda Swarup, Mr. de la Fosse and Khan Bahadur Muhammad Halim, vice-chairman of the committee, Babu Vikramajit Singh and Rev. Mr. Douglas and Pandit Vishwanath Tholal will be the secretaries. The members of the committee are Sir Thomas Smith, Rai Bahadur Behari Lal, Mr. C. T. Allen, Lala Kamalapat, Mr. V. N. Mehta, Rai Bahadur Bishambharnath, Mr. G. Clarke, Pandit Balbhadder Prasad Tiwari, Dr. Watson, Lala Sriram Khanna, and Dr. Annett.

H. R. H. The Prince of Wales.



H. R. H. EDWARD, PRINCE OF WALES.

The Prince of Wales was born at White Lodge, Richmond Park, on the 23rd June, 1894, while his great-grand-mother Queen Victoria was still reigning. The Prince was brought up as an ordinary English child of the upper classes. From early years he displayed great coolness and self-possession, all the same he was very lively and fond of youthful pranks.

In the spring of 1902 the Prince began his regular education under a tutor, and went through the ordinary curriculum of an English private school. He showed remarkable retentive memory and early promise as a speaker. It is said that at a children's party the Prince was given a sword by his hostess and King George V (then Duke of York) told the Prince that he ought to express his thanks for the present. The child solemnly mounted a chair and said with great dignity, "Thank you for giving me such a beautiful sword, I shall always keep it and remember this night". King George laughingly remarked that his son spoke better than he himself did.

From his boyhood the Prince showed great interest in all athletic pursuits such as cricket, horsemanship, swimming, yachting and shooting. In 1907 he entered the Naval College at

Osborne where he remained for two years after which he went to Bartmouth. At Osborne he led the life of an ordinary cadet.

At Bartmouth College he was created Prince of Wales on his 16th birthday. In 1911 he was appointed midshipman on the battleship *The Hindustan* and displayed instinctive aptitude for seamanship and navigation.

In 1912 he went to Paris where he mixed freely with all classes of French society and many prominent men. In October he matriculated as a student of Magdalen College, Oxford. At Oxford he lived entirely as the other students; he played foot-ball for his College and served as a private in the Officers' Training Corps and generally took a full share in the life of the University.

The war broke out in August 1914. Immediately the Prince displayed great anxiety to go to the front. On the 7th August he was gazetted as a 2nd Lieutenant in the Grenadier Guards. He applied himself earnestly to his duty and it was only on the personal intervention of Lord Kitchener that he was prevented from going to the front at once. In November 1914 he was appointed an Aid-de-Camp to Lord French and joined the staff in France. During this time he took his ordinary share in the life of the trenches, mixing with soldiers and undergoing the usual risk of such a life. On one occasion when he had driven up in his motor car near the front lines the bursting of a shell entirely destroyed the car and killed the chauffeur. The Prince had a narrow escape. He served in Flanders till March 1916, after which he proceeded to Egypt and visited the wounded at Khartoum. In May 1916 he went to the Italian front and took conspicuous part in the operations from the air. By the end of the war he had risen to the rank of captain.

In August 1919 the Prince started on a four months' journey through Canada. He was welcomed with the utmost enthusiasm by all classes and specially by soldiers who had served with him from the beginning of war. After four months in Canada he went to the United States of America on an informal visit. There too he was received with great enthusiasm in every city which he visited. In December 1919 he returned to England and made his famous Guildhall speech. The following is an extract from that speech which will show his keen interest in the Empire especially India;—

"The people in the old country must understand that the patriotism of the Dominions is

national patriotism and not merely loyalty to Great Britain. It is loyalty to the British Institutions, it is loyalty to the world-wide British system of life and Government, and it is, above all, loyalty to the British Empire of which Great Britain like the Dominions is only a part. Our Empire implies a partnership of free nations living under the same system of law, pursuing the same democratic aims and actuated by the same human ideals. The British Empire is thus something far grander than an Empire in the old sense of the term, and its younger nations — Canada, Australia, New Zealand, South Africa and India — are now universally recognized as nations by the fact that they are signatories to the Peace Treaty which they fought so magnificently to secure. Now among these new nations of the British Empire recognized as signatories at Versailles, is India. India occupies a special position. Like the Dominions she played a gallant part in the war and we owe much to her soldiers and Government and men for all they endured in the common cause. I am looking forward to the day when I shall be able to pay a visit to that wonderful country."

In March 1920 the Prince left England in the

Renown for a trip to New Zealand. In his voyage he passed through the Panama Canal, visited Honolulu and crossed the equator. He participated in all the humorous ceremonies with which sailed invest this occasion. He was given a wonderful reception from the whole of New Zealand and made many friends by his charming manners. He left New Zealand in May for Australia. In this country he endeared himself to every one and aroused an enthusiasm, perhaps greater than anywhere else, in the course of his world tour. The Prince left Australia in August and arrived at Portsmouth on October 11th, 1920. Since that time he has taken a prominent part in public life specially in organizing charities of different kinds.

His Royal Highness lives a very strenuous life, rising early in the morning, taking hard exercise before breakfast and spending the morning with his Secretaries attending to his enormous private business correspondence. He lives with great simplicity in St. James Palace, occupying a suite of chambers consisting of two formal reception rooms, one small sitting room and one bed room. He keeps himself constantly in the hardest physical training.

Cost of Living in Madras in November.

Note by Dr. Gilbert Slater, M.A., D.Sc., Publicity Officer, Madras.

It is estimated that the cost of living in Madras in the beginning of November was 82% higher than in July 1914.

This result is obtained by comparing the prices of food, kerosine, firewood, clothing and housing at the two dates, and assigning to each commodity a certain weight in accordance with its estimated importance in the life of the working classes. The weighting adopted is the same as that adopted by the Labour Office of Bombay, except that:—

(1) Wheat is omitted and the weight assigned to wheat in Bombay added to that assigned to rice.

(2) Ragi is substituted for cholam and kambu.

(3) Dhall is substituted for gram, and Bengal gram for Tur dal.

The commodities and the respective weights assigned to them are therefore:—

Commodity	Price (1914 price=100)	Weight
Rice (3 sorts)	158	40.8
Ragi	160	5.9
Dhall	214	3.4
Bengal gram	200	1.0
Jaggery	250	4.8
Sugar (refined)	200	1.2
Tea	118	.1

Salt	106	.9
Beef	200	.7
Mutton	200	1.1
Milk	223	10.3
Ghee	162	6.1
Potatoes	167	4.0
Onions	240	.4
Gingelly Oil	140	1.0
Kerosine	182	1.8
Firewood	173	3.1
Clothing	288	4.3
House rent	181	9.1

The calculation is made as follows. The price in the current month is divided by the price in July 1914, and the quotient multiplied by 100. The product is multiplied by the weight assigned to the commodity, and the products obtained by this multiplication are added together. The sum, in this instance, is 18,181. This is divided by 100, the sum of the weights, and the quotient, 181.81 represents the ratio to 100 that the weighted average November price of the commodities observed bears to the price in July 1914.

The Bombay weighting was calculated on all India consumption.

The prices are those of the Triplicane Urban Co-operative Society or of the Moore Market, except for clothing and house-rent.

U. S. A. PRESIDENT ON EDUCATION

WARREN G. HARDING

We have just awakened to the fact that the education of the American child has fallen below the standard necessary for the protection of our future. We have to face the fact that our school teachers are underpaid; that in physical training, in the teaching of American civil government and American history, in the principles of Americanism and of Americanization we have been deplorably delinquent. But nowhere is there more cause for alarm than in the fact that the rural-school term is far too short and that four-fifths of the rural schools are one-teacher schools, resulting in hasty and careless teaching, and that the opportunity for country boys and girls to have high-school education is all too slight * * * We owe it to the childhood of the Nation and the childhood of the agricultural district of our land to place at its disposal the utmost in educational facilities.

Here is Something to Ponder

For All Interested in

Education in India.

Remarkable Rural School Scheme.

The State Department of Education of Maine has, according to the *Boston Journal of Education*, made a remarkable contribution to Rural Schoolhouse Architecture. State Superintendent Augustus O. Thomas is certainly highly fortunate in the men and women of his department. Among these A. W. Gordon, general agent for schools in the unorganized territory of Maine, who has worked out a plan for a one-room school that is a great contribution to rural school efficiency in all essential progressive phases of school and community activities.

Mr. Gordon has planned a school building adaptable for any location, suitable for community use, with room for all school activities, with modern conveniences, and at the same time by using the same space for different

purposes, keeping the building down to reasonable dimensions and reasonable cost.

The building may be placed in any location by making certain slight adaptations. The lighting comes in each instance either from the north-west, west or south-west, which, according to the best authorities, is the best direction for lighting in northern latitude. While it may not be unusual to place a rural school building side to the high way, the building is made attractive on all four sides, there being no blank walls as in the case of most school buildings. This is made possible without interfering with the proper lighting of the school room. This is practically a unilateral system of lighting; a small window in the left rear really affecting the lighting scheme very little, while a window to the left of the teacher's desk is

placed behind the partition so that it does not affect the lighting of the school room except to provide light for the teacher which is usually overlooked.

The plan of a vestibule entrance with the ward-robcs on the side of the school room is a decided advantage. The vestibule simply provides a means of protection for the school room from direct outdoor drafts and cold. Ward-robcs or coat rooms are for that purpose only and should never be loafing places for school children. The coat rooms are small but at the same time with sufficient space for the clothing of forty children. The coat rooms may be used either separately or as one room. From the position of the teacher's desk, the teacher will be able to have an unobstructed view through the two coat rooms and of the school room at the same time. This is a decided advantage.

Another rather unique feature is provided for by the arrangement of the coat rooms so that they may be used as a play room for small children during the stormy or cold weather after they have completed their work in school and would ordinarily be dismissed. By leaving the upper half of the Dutch door of the girls' wardrobe open, the teacher can easily keep an eye on the children using this as a play room and at the same time they would be out of sight of the pupils in the school room. The upper half of this Dutch door has a glass panel so that it can be closed if the children are noisy. The teacher could still be able to observe their movements.

The combination stage and work room is a new feature. This is large enough for a good size stage when school entertainments are given and at other times provides ample space for a school work room. The end where the chimney is located is to be used for domestic arts and the other end used for manual training. The large closets at each end are a great convenience. The partition doors will be closed except when this room is in use. There is a large blackboard panel on the front of each of the doors and by arrangement of the steps even the smallest tots will be able to reach these boards.

The stage is two and one-half feet high and by utilizing this space, it is possible to arrange for chemical toilets and a fuel room under the stage without a great deal of excavation. At the same time the chemical toilets will be placed below frost and thus the frequent difficulty in this connection avoided. The fuel room is of ample size and connected with the school room through the boys' toilet. This arrangement is cheaper than an attached out-building

and, of course, it is much to be preferred.

The plan is to use movable chair desks and to have folding opera seats for extra seating when the building is used for community purposes. At other times these can be placed in the store room which is of good size.

Another feature is the use of casement windows which have many advantages for a school room, but if the old style of window should be preferred, they can easily be used without any change of importance in the plans. There is ample blackboard space, and the blackboard is four feet and one half in width, the bottom being twenty-seven inches from the floor. This gives fifty per cent more blackboard than with the usual board of three feet in width, and is placed conveniently for use of all grades of pupils from the first grader to the tall boy in the eighth grade.

Much is gained by the convenient and proper location of the heater and the position of the chimney and ventilating flue which provides for a proper circulation of the air. The smoke pipe is intentionally arranged to pass through the top of the stage but above the stage opening where it will not be observed from the school room, to assist in heating the work room.

The teacher needs a mirror around the curve of time to show what the child will need by and by.

An effort is being made to introduce German cement into the Jamaica market. A sample was sent to the Government Laboratory with the request that it be analysed for trade purposes; the result to be made public. The Government Laboratory declined to make the analysis. It is understood that the Government have been requested to make provision in the new tariff for the protection of British-made cement, and also to leave the way open for the establishment of a factory for the development of a local cement industry.

The Canadian Government has established a Trade Commissioner's office in Jamaica. Trade between Canada and Jamaica is growing. The largest cargo brought to Kingston by a vessel of the Canadian Government Merchant Marine since the ratification of the Trade Agreement was recently landed by the Canadian Fisher. It was made up of 1,000 tons, consisting principally of foodstuffs. While the bulk of this year's citrus crop is being sent to England, consignments of oranges and grape fruits are also being sent to Canada by the new line in addition to other classes of tropical produce.

British Trade and Finance.

(From our Correspondent.)

Food Prices in Britain.

London, Nov. 11.—A strong complaint against the inaction of the Government in face of the high profits made in Great Britain by middlemen dealing in foodstuffs was made in the House of Commons yesterday by Mr. Cautley, who is one of the spokesmen of agricultural interests in the House.

"In every retail trade there are price controls of the most intricate character," Mr. Cautley remarked. He instanced the milk combined in London, "This is what happens" he said, "On the day before the milk contract expires they send round a letter to farmers saying, 'Our price for the next six months is so-and-so. If you do not agree, stop sending your milk.' There is no other customer for the farmer.

They have it in their own hands to fix the buying price, and then they determine the selling price and advertise in the papers that the charge to the consumer will be so-and-so in the next six months. There is no other source of supply, and consumers have to pay."

During the year the price of wheat in Great Britain had fallen from 95s. a quarter to 45s. and he had even seen it sold for 39s. in the last few weeks. In view of this fall in price the loaf ought to be down to 8d. or 9d. and yet one saw bread priced at 1s. or 1s. 1d. in the villages.

A small butcher with a turnover of £ 160 a week — which would mean that he sold four beasts and three or four sheep — would make a profit of 25 per cent. That meant a profit of £ 40 a week, or £ 2,000 a year. It was perfectly outrageous profit.

The Falling Mark.

The mark in Germany to day is worth about a fiftieth of its 1914 value.

A *Daily Mail* correspondent made yesterday the following little estimate of a day's expenditure in London if the shilling had suffered just the same devaluation and was now worth something less than a farthing.

In the morning he got his usual shilling shave and gave the usual tip-total payments £3-15s. His luncheon cost 5s. (old style), under the new £ 3-15s. His luncheon cost 5s. (old style) under the new conditions £ 12 10s. His dinner in a very excellent restaurant where his ordinary bill would have been 15s. was £ 37-10s. Cab fares

£ 6-5s. That is £ 60 on the day. He shuddered at the idea of a theatre.

"This estimate" he writes, "has nothing to do with the international values, but is the sheer result of the devaluation of money. A friend just returned from Weisbaden tells me that the ordinary tip to a railway porter is 10 marks. That means that in English money my friend only gave a few pence — but the ten marks is the sum given, just as 10s. would be given in place of six pence if the shilling fell to a fiftieth part of its former value."

Lord Mayor's Banquet.

A thick fog marred somewhat the Lord Mayor's show, which was characterized by peacetime features and tableaux representing industry and charity. Cars from St. Dunstan's Hostel were filled with blinded soldiers, who were seen engaged in basket-making while scenes of child-life were depicted by children from the ragged schools.

At the Lord Mayor's banquet in the Guildhall Mr. Lloyd George, in responding to the toast of "His Majesty's Ministers", said that the trade depression which had swept over the world was one of the inevitable consequences of all wars, but he believed that the force of the cyclone had spent itself. Fortunately the ship had not been water-logged. The normal level would come slowly. There were three favourable symptoms. First the great glut of products of the 1920 boom had been liquidated. The world needed British goods, but it was too impoverished to pay for them. Britain hoped, however, to help by a revised scheme for export "credits". Work alone would fill the depleted tills of the world. A purchasing power must be created. Secondly, a favourable symptom in every land was that the dazed slackness which seemed to overcome labour was passing away, and every one was settling down to work. Thirdly, in Britain the foundation of British credits was solid. Britain had faced her burdens honestly and paid her way. He (Mr. Lloyd George) thought that Britain's reward was coming. The exports for October had been better than they had been since March. The blue sky was beginning to emerge.

He described the Washington Conference as the rainbow across the sky of disarmament, the only road to safety. "The Conference would prove to be the greatest event which the world had seen for 1,900 years.

With regard to Ireland, Mr. Lloyd George said: "I cannot reveal the secrets of the Conference room, but there is a better prospect of our invitation to Ireland to come into a free partnership in the Empire being heeded than at any time for years. There are now three parties represented at the Conference, and success depends upon the extent to which it is possible to reconcile the differences of temperament, tradition and interest. If each of us approaches the many tangled problems, determined not to budge from the position taken up, our attitude would be hailed with acclamation by unthinking people, but it would not lead to peace."

The Marquis Curzon (Secretary of State for Foreign Affairs,) in proposing the toast of "The Ambassadors," said: "The war has left many ups and downs, and it is for diplomatists to take the world back as quickly as possible to peace by substituting international for national action."

Peopling a White Australia.

Lord Northcliffe's warning to Australia of the need to increase her white population in the vast, sparsely-populated pastoral districts has caused a very wide revival of interest both in Australia and in Great Britain in the immigration question.

Lord Northcliffe's suggestions do not contemplate immigration which would swell the Australian artizan or town classes. Consequently, as it was stated in the Victorian Parliament by Ministerial speakers on Wednesday, the fear in Australian Labour circles that increased population would lower wages is ill-conceived.

On this aspect of the question Mr. J.R. Clynes, one of the most thoughtful and influential Labour leaders in England, said, a few days ago, in reply to a *Daily Mail* reporter: "Immigration of the right sort is a guarantee of productive power and of a demand for commodities of every description. That demand and that power would afford a safeguard against reduced wages." He added that, in his opinion, "good conditions in rural areas for labour employed on food production would not adversely affect artizans' wages in the town. Many people, as past experience has shown, can, with advantage to themselves, leave a small country for a large one with only a small population, but immigration to a large country should be on lines to ensure employment and prosperity to the workers and should be supervised and conducted by res-

ponsible organizations in both the countries concerned."

German Orders in U. S.

A New York message states that buying at the rate of £ 76,000,000 yearly, German mills and industries are taking cotton from the south, copper from the west and north-west, and lead oils, a few light machines, tobacco, and canned milk from other areas in the United States.

Despite the extreme depreciation of the German mark, Germany is now the United States' third best European customer in foreign commerce. During the seven months ended July, Germany, it is stated, has imported from this country 2,240 tons of refined copper ingots and bars, valued at more than £ 4,000,000. This is more than any other European country has imported from this country, and about twice the amount of copper shipped to either England or France.

Cheap German Furniture.

I have come to High Wycombe on my investigations as to how rates of exchange are affecting the furniture trade, because a few days ago I heard of two makers buying a factory in Austria for about 30,000,000 kronen, which, translated into English money, at that time, was about £ 5,000. I am told that this Austrian firm is sending furniture to Great Britain, and, of course, to other countries at prices which, on the rates of exchange, are staggering. I am told that business in France is practically at a standstill, due to the abnormal rates of exchange to-day, and it is well-known that Germany is taking advantage of this state of affairs and doing big business in France, Holland, Scandinavia, and other countries. Furniture, such as the cheaper cabinet type and bentwood chairs, is delivered at British ports from Germany, and Austria, *via* Scandinavia for half the prices at which British factories can produce them.

New Raw Material for Paper Manufacture.

According to a German press report, the Muldentalwerke A. G., of Freiberg, has recently patented a process for the treatment of fresh water flora which provides material which can be used in the manufacture of paper, pasteboard, cardboard, etc. The report further states that this company has carried out a series of experiments in its own factories, and has proved the practical value of the new raw material and the profitableness of the production. It has succeeded under very favourable conditions in securing for itself the sole patent rights for the manufacture of this

product in Central Germany. The directors of the company now intend to establish a new factory for the production of this material, in order to render themselves independent of the supply of other raw material.

Lyons Gold and Silver Thread Industry.

A Report from H. M. Acting Consul-General at Lyons to the Department states that the anticipated improvement in the demand for gold and silver thread which was looked for in December last has not materialized, and the Corporation of Gold and Silver Thread Manufacturers of Lyons, which is directly interested, will feel the effects very severely.

European mode seems to be almost completely disinterested in the introduction of gold thread in the manufacture of tissues, and the United States, which for a time ordered small quantities of artificial and mixed threads, has suddenly suspended orders. The situation as regards India, the principal market for the industry, has for more than a year been bad, and still holds no immediate prospects of improvement.

Export Credits.

Sir Edward Mountain, whose proposals for an extension of the British Government's export credits scheme were published in the Continental *Daily Mail* on September 28 last, made a statement yesterday with regard to the Government's plan by which the existing scheme would be applicable to all countries and operate up to September 8, 1927, the State guaranteeing 100 per cent of the cost instead of 85 per cent as at present. "The sum available is not sufficient to my mind," he said, "and I do not see how it can be definitely allotted to particular firms. There is, I believe, about £ 23,000,000 left of the original £ 26,000,000 allotted to the Department of Overseas trade. Under the new proposals 46 firms might receive credit of £ 500,000 each.

"Another criticism is that export merchants have to bear far too great a proportion of risk. One of the most important things that I suggested in my scheme was that a committee should be appointed to negotiate with the various countries requiring credit and find out what security could be offered. If no security were available there would be no credit. If the security offered were in the opinion of the committee sufficient, then credit could be given without any great risk.

I believe that with a Government guarantee against ultimate loss a very large amount of trade could be fairly quickly established on a credit basis, an amount far and away greater than the £ 23,000,000 now available. Even

if only the present £ 23,000,000 were given as a guarantee against ultimate loss, it is not likely that under any contingency the whole of that sum would be lost. This is a very different proposition from paying away a similar sum to relieve unemployment which can never be recovered."

British Census Revelations.

The first official figures of the Census of June 19 give the total population of England, Scotland and Wales (Ireland was not included in the enumeration) as 42,767,530, an increase of only 1,936,134 over the figures for 1911.

The outstanding features of the Census are the largest population ever recorded, smallest increase on record — the 1911 figures were 3,831,450 in excess of those in 1901 — surplus of 1,906,284 women (583,782 more than in 1911) London and industrial Lancashire decreasing, fewest births since 1811.

The war's effects are seen in the smallness of the total increase, in the larger preponderance of women and in the falling off of births. In 1801, when the Census was first taken, the total population of England and Wales was 892,536; in 1841 it had increased to 15,914,148; in 1881 to 25,974,439; in 1901 to 32,527,843; in 1911 to 36,070,492 and this year to 37,885,242. This is the highest population ever recorded but the rate of increase every ten years shows on the whole a steady decline as the population grows larger.

The excess of women to men has shown a steady increase but the difference has never been so marked as in the last period. While the male population increased in that time by 676,000 the increase in females was more than 1,125,000 and the proportion of females to males in Great Britain rose from 1,066 to 1,000 in 1911 to 1,093 to 1,000 in 1921. The preponderance is greater in England, where there are now 1,101 women to every 1,000 men, while in Scotland there are 1,078 and in Wales only 1,000. The population of Greater London — 7,476,168 — shows an increase of 224,810, compared with 659,756 in the preceding period. On the other hand, the administrative County and City of London (the inner ring, which does not include the outer suburbs) shows an actual decrease in population of 38,436, the new total being 4,483,240. The decrease is mainly due to migration to the outer suburbs.

South Indian Railway.

The report of the South Indian Railway Company, Ltd., for the year ended March 31, states that the gross earnings were Rs. 5,07,28,036

while the working expenses were Rs.2,48,34,019 and the net earnings were Rs. 1,58,94,017. Compared with the previous year there was an increase of Rs. 5,78,521, or 1.44 per cent in the gross earnings; an increase of Rs. 29,30,749 or 13.38 per cent in the working expenses; and a decrease of Rs. 23,52,228 or 12.89 per cent in the net earnings. The Company's share of the surplus profits, less adjustments in respect of previous periods, amounted to Rs. 7,11,217. From this the following Indian taxes have been paid: Income-tax Rs. 53,099; Indian supertax Rs. 36,157—88,256; Rs. 622,961. To meet the second instalment due for supertax for the year 1920-21 a further sum has also been left with the Agent in India of Rs. 22,961; balance remitted to England Rs. 6,00,000; at exchange of 1s. 3,17-32 per rupee, realizing £38,828 2s. 6d. The profits before India taxation were only Rs. 98,700 less than

those of the previous year. But there was a serious fall from 2s. 1d. to 1s.3,17-32d. in the rate of exchange at which the amount available for remittance was brought Home, resulting in a large decrease in the sterling amount realized. The balance at credit of surplus profits account on March 31 was £134,940 19s. 6d. Since that date various sums have been received and expended, and the account as at end of October, 1921, stands at £160,544 10s. 9d. The Board recommend a final dividend of $2\frac{1}{2}$ p.c. making with the guaranteed interest of $1\frac{3}{4}$ per cent, a total payment for the half year ending December 31, 1921, of $4\frac{1}{4}$ per cent less income-tax. The total distribution for the year will then be 8 per cent ($4\frac{1}{2}$ per cent from surplus profits, and $3\frac{1}{2}$ per cent from guaranteed interest) as against 8 per cent paid in the previous year. Meeting, 91, Petty France, S.W.1, November 9, 2 p.m.

Fourth International Road Congress in Spain.

The fourth meeting of the International Road Congress which was to have been held at Munich in July 1916, had to be postponed on account of the war, and it has now been decided to hold the meeting in Spain during the spring of 1923.

Officers of the Public Works Department of not less than fifteen years' standing who wish to submit papers for consideration at the Congress are requested to send in their names to the Madras Government together with the subjects of their papers before 15th October 1921. The papers are to be forwarded to the Government of India by the 1st March 1922 to ensure the timely transmission of such papers as may be selected to the General Secretary of the Association.

PROGRAMME OF SUBJECTS TO BE DEALT WITH.

FIRST SECTION.—Construction and Maintenance.

First Question.—Surfacing of roads with concrete.

Second Question.—Use of bitumen and asphalt for surfacing.

Third Question.—The subject will be chosen by the "Bureau Executif" in agreement with the "Commission locale d'organisation du Congress." (Preferably a subject of interest to Municipal Engineers).

Communication.—The subject will be chosen by the Bureau Executif in agreement with the 'Commission locale d'organisation du Congress'.

SECOND SECTION.—Traffic and Development

Fourth Question.—The development of motor transport.

Fifth Question.—General Traffic Regulations.

Sixth Question.—The problem of traffic on congested roads and streets of towns.

Conditions governing the preparation of papers on the 'Questions' and 'Communications' which have been selected.

There can only be one paper on any selected subject for every country, but the paper may be prepared in collaboration by several authors.

The papers must reach the General Secretary of the Association (Paris, 1, Avenue d' Iena) before July 1st, 1922.

The papers must be prepared in one of the following languages: English, French, Spanish or German. They should be typed and in triplicate, and written on one side of the sheet only. Triplicate copies are required in order to enable the General Secretary to proceed simultaneously with the work of translation and printing in the different languages. The authors may, should they so desire, themselves supply translations of their papers.

PAPERS ON "QUESTIONS".

The length of each paper is limited to 8,000 words and the number of sketches inserted in the text is limited to six. The total area of such sketches is limited to 300 square centimetres.

The number of attached plans or photographs is limited to two, and the dimensions of the sheets are limited to 23 centimetres in height and 45 centimetres in width including the margin.

Such plans or drawings should be supplied

on tracing cloth with sharp black lines.

PAPERS ON "COMMUNICATIONS."

The limit for these is 500 words, with a maximum of three sketches in the text and total area of 150 square centimetres, and only one attached drawing or photograph.

Pulp and Paper.

Captain E. J. Edwards, senior British Trade Commissioner in Canada, reports to the Department of Overseas Trade that he has been discussing with leading members of the pulp and paper industry in Canada the possibility of importing from this country those grades of paper and boards which are not at present manufactured in the Dominion but are obtained from foreign sources.

Canadian manufacturers have, it is stated, secured a considerable portion of the trade the United Kingdom had to drop during the war, and though the United States seized a large share Canada is rapidly developing and absorbing all the domestic trade, as well as exporting many lines to the United Kingdom and elsewhere. Canadian allied paper trades have \$300,000,000 capital invested, are powerful and very aggressive, and there is little hope that United Kingdom manufacturers will regain lost business. A large quantity of Canada's imports from United States are due to the peculiar location of one large Canadian factory, which is situated at Fort Frances, on the Canadian side of the river boundary line, and has another plant on the United States side. This factory pumps its pulp through an under river tunnel to the United States plant, where it is manufactured, and comes back as United States manufactured paper.

In the following classes United Kingdom manufacturers may be able to obtain additional business. The import figures furnished have been taken from official sources and represent totals for the 12 months ended March 31, 1921 :—

1. Cardboard, including Bristol board and blanks mill-board, and binder's board, not pasted or coated	
From United Kingdom	\$21,008
From United States	\$786,204

N.B.—This is a good line for United Kingdom manufacturers to send. Canadian Bristol board is of the American type, and not like British; in Canada it is more like the card used for visiting cards.

2. Ditto, pasted and coated.	
From United Kingdom	\$4,484
From United States	\$155,478
Fair business possible here.	

3. Printing paper, book and litho paper, coated, including flint and foil coated paper.

From United Kingdom	\$8,831
From United States	\$81,115

Good market for this, especially in higher qualities : ordinary qualities are made in Canada.

4. Waxed paper, printed or not.

From United States, 430,636 lb.,	
valued at	\$63,946

From United Kingdom, 440 lb.,	
valued at	\$156

5. Pads, not printed, papier maché ware.

Last year United Kingdom trade	
fell to	\$573

United States trade rose by \$6,000 to \$24,777

6. Papeteries and ruled or plain bordered and boxed or wrapped stationery.

United Kingdom imports rose to	
\$21,057 from	\$7,330

United States imports rose to	
\$171,548 from	\$159,852

Business should be obtainable here, especially in good grades, but the market is largely governed by American styles.

7. Envelopes.

From United Kingdom (growing)	
(1920, \$6,892)	\$11,713
From United States	\$157,751

The same remark as in 6 applies here.

Generally it has to be remembered that the Canadian market by its close proximity to the United States is largely governed by American sizes and styles, and United Kingdom firms would need to study local peculiarities, which vary even amongst different makers of the same class of goods.

A measure of commercial importance, unlikely to be opposed, has been introduced in the Western Australian Parliament. It is designed so to amend the law of evidence that the court may accept shipping documents as *prima facie* evidence of the ownership of goods. It has been found very difficult at times to prove the ownership of goods stolen from ships and wharves. The difficulties under which the authorities laboured were disclosed before the Royal Commission on the Pillaging of Cargo conducted by the late Chief Justice Madden, of Victoria. Similar legislation has been passed in Tasmania

Industrial Notes from the United States.

By A. T. Marks.

A Remarkable New Tractor-Operated Cotton Picker.

Washington, D. C., U. S. A.—Cotton picking has been done by human labour for a great many years, but now new machinery has been invented and developed that makes cotton picking a simple, mechanical operation. A concern in St. Louis, state of Missouri, is placing on the market a cotton picker that can be utilized with any tractor, and the claim is made that with five men it will do the work of thirty-six hand pickers and do the work twenty-five per cent cleaner. Very great economy is claimed on the basis of a capacity of 3,600 pounds of cotton a day for the machine and the five pickers as compared with the average of 100 pounds a day for good hand pickers.

The picker consists essentially of a large metallic storage tank mounted on two wheels which is coupled to and is transported by a farm tractor which furnishes the power to drive a specially designed vacuum pump. When the pump is in service it is driven by a chain belt from a pulley. The belt may be driven by the same drive shaft that is used for belt power and engaged or disengaged as conditions may require.

The pump exhausts the air from the tank, which is tightly closed. In an upper compartment of the tank are six inlets to which are attached lines of hose that have one-inch diameter at the nozzles and increase to one and one-half inches diameter at the inlets. At the end of each tube is a Y, on the arms of which are intakes, there being twelve of these in all.

The hose is supported by the waist belts of the pickers, who hold a nozzle in either hand. The opening and closing of the nozzles are controlled by levers operated by the fingers. When one of the nozzles is applied to a boll the cotton is drawn from it by the suction and is drawn through the tube into the tank. The tank has a capacity of over 500 pounds of cotton, and when filled it must be emptied. The tank is quickly discharged by dropping a circular trap or door at the rear of the tank and placing a cloth sack about the opening. The exhaust from the pump is turned into the tank and the cotton is blown from it into the sack, which is then tied and piled or hauled from the field. An ingenious device registers the fact when the tank is full.

The truck that carries the tank is substantially built, a frame in which the tank is mounted being carried on an axle and two wheels. The tank is 66 inches long and 44 inches diameter. The frame has a drawhead and this may be coupled to the draw-bar of the tractor.

The tank is made of steel and it is surrounded by a wire rack for carrying the hose when it is not in use or the picker is being transported. In the upper compartment of the tank is a guage that registers the degree of vacuum. In this compartment, above the intakes, is a screen that prevents the cotton being drawn into the vacuum pumps. The vacuum pump or blower is supported by two brackets bolted to the differential housing of the rear axle of the tractor, when this is possible, or on some other unit where it may be driven by the belt pulley shaft, a small chain sprocket being substituted for the pulley.

Worth knowing about Automobiles.

Some people wonder why they are sick when they take a bath but once in two weeks, and some people wonder why their automobiles won't run when they clean them but once in a month, and then never touch the inside of the motor. What is needed is not greater motors, but drivers who will study the construction of a car and treat it as though it were human.

The very first thing is a familiar warning: Keep the inside of the motor free from carbon; but everybody does not know how to do it. To start with, have the valves properly ground and adjusted and all carbon burned out. After this is well done, a tea cup full of kerosene put through the pet-cocks twice a week will keep the motor in good shape. After the kerosene is equally distributed through the various cylinders the motor should be given about ten turns, either by hand or by using the starter. This will soak the entire motor with kerosene. Then apply the switch, giving the motor a medium amount of gas. In cold weather this remedy should be applied after the motor is warmed up, or in returning to the garage in the evening, otherwise the motor will require some skill to start. After the motor is started and gets warmed up, running at a medium speed, open one pet-cock at a time, while the motor is in operation, and you can notice the fine pieces of carbon coming out. This kerosene

can also be applied by using a small oil can, applying the kerosene through the air adjustment of the carburetter while the motor is warm and running at a medium speed, as the motor dies down. While the kerosene is being applied keep the hand on the throttle of the carburetter and increase the speed.

Another point is removing the plugs once a week and soaking them in a pail of kerosene over night, then using a little emery on the points, drying them well; also adjusting all the points accurately to a like thickness. Then see that none of the porcelains is broken, which will cause a missing cylinder. Also see that all the porcelains are tightened by small nuts that are at the top of the porcelains. After this is done, each plug should have a washer and be thoroughly tightened in the cylinder head.

Most people have trouble with their motor heating up, and it is small wonder when the water that is in the radiator has collected so much rust and grit that it has shut off the circulation through the various cylinders. This grit is removed by running the front of the car over a manhole or drain while the motor is in operation. You will find a small outlet plug at the bottom of the radiator on all makes of cars. After opening this take off the cap from the radiator water intake and apply a hose with running water. Let the motor run until the water from the outlet pipe becomes clear. You can easily notice the collected rust and grit as it comes from the outlet pipe. This operation once in two weeks, together with keeping the cooling fan well oiled and in perfect running condition, will bring you a perfect cooling system.

Oil should be drained from the crank case once in three months and new oil applied. The same should be done in the transmission and differential cases, and these cases should at all times have the proper amount of good oil and grease. An occasional application of neatsfoot oil to the clutch will keep it in good condition, together with keeping the grease cup well filled.

The brakes should be properly adjusted. After jacking the rear of the car up, with the motor running in low gear, one man should operate the foot brakes back and forth, while another applies kerosene to the brake bands. This will remove all grease and grit and give perfect action. If the brake linings are badly worn, and you want to come down a steep hill without relining brakes, apply hose of running water for about five minutes, soaking each

brake lining in water. This will expand your brakes and give you quick action for a short time. Keep all parts of the machinery oiled, and the tyres properly inflated to the proper number of pounds. One drop of oil applied to the valve of the inner tube before air is applied will prevent any air from escaping from the tyre.

A rag partially damped in kerosene and oil is an excellent remedy to remove all sand and grit from the body. To keep from scratching the paint on the body great care should be taken to shake out the cloth thoroughly as you go along, as this cloth will accumulate much grit, which is very injurious to paint. After this is done a clean piece of silk cloth will wonderfully brighten up the paint.

Finally, in driving a car do not advance spark on starting, or on a hill or heavy pull, or your motor will start knocking. Restart your spark and you may not get the speed, but you will eliminate the knock and make your motor last twice as long and save your repair bill.

Correct photographic exposure at a glance.

An ingenious and unique device which measures light in a manner analogous to the way in which a scale weighs a substance has been invented, after long experimentation, by a San Francisco, California, man. The new invention will be of inestimable value to photographers, both professional and amateur, for it is a well known fact that photographic value is often far different from the apparent brightness of the light.

This device must not be confused with the so-called "exposure meters". It has no settings to make, no calculations to figure out and nothing to look through. It is self-acting and requires no factors or tables in its manipulations. Instead, it is simply pointed at the source of illumination — sun, window, or whatever it may be — and the intensity of the light is instantly shown. A corresponding dial indicates relative exposures and stop-settings for the camera for that particular light.

The little meter is about the size of a silver dollar, and as it requires no adjustments or settings its value to the "kodaker" or to the professional photographer is apparent, for it does away with the dread "trick light" miscalculation which every photographer knows only too well.

Here's a Farmer's Loading Station.

It is called variously a bag, a sack, a short

sack, a gunny sack, even a "poke" providing what part of the United States you happen to be in; but for one leading purpose, at least—the transportation of grain and produce from farm to market—its hitherto universal rule is threatened. Grain bags got up to thirty and forty cents each during the past season; they are somewhat lower at present. But whatever price they command won't this year trouble those farmers who own a loading station.

The farmer-owned small loading station is one of the newest things in the American farming industry. A typical "loading station", recently completed near the town of Shafter, state of California, indicates the general character, as well as the merits, of the idea. This loading station has a twelve-bin capacity, or a total of 72,000 bushels of grain, and was installed by a hundred grain raisers who co-operated.

The bins are of metal and are mouse- and vermin-proof and also weather-proof. Concrete pits are installed close by. Into the pits arriving grain is dumped from wagon or truck, in bulk and weighed, cleaned, graded and then stored by elevator. The bins are so arranged and connected that the rapid shifting of grain from one bin to another or to a railroad car is easily effected.

Under the Shafter plan the threshed grain is hauled immediately from field to loading station in bulk. Bags are entirely dispensed with, and the quick handling averts rat and squirrel waste at the farm. The grain remains in the loading station until the farmer wishes to sell, or until cars arrive.

Wheat, barley, kaffir and gyp corn are the principal grains of the section, but rice and beans will be placed in this storage as needed.

As regards the financial aspects of the plan, the Shafter farmers say that they would have saved the entire cost of the station had they had it available for the present year's crops. This movement toward more efficient handling of farm products at the source is likely to spread, not only in this country, but throughout the world.

Harvesting and Threshing in a Single Operation.

Among interesting farm apparatus put on the American market recently a high place must be awarded to the combined "harvester and thresher". By an ingenious arrangement for making the tractor a part of the harvester-thresher, yet permitting its removal for other work, the auxiliary motor and pulling hitch are dispensed with at a large saving.

The outfit cuts a swath $16\frac{1}{2}$ feet wide at a maximum speed of four miles per hour, which gives it a capacity of seven acres an hour. One of the features is an arrangement of the threshing cylinder and blast tube which makes it possible to blow off a high percentage of the chaff before the straw and grain pass to the separator, so that the work of the latter unit is greatly lightened and its weight and its cost lessened accordingly. The outfit is claimed to take the place of all farm machinery used in wheat raising, with the obvious exception of the tillage tools.

The manufacturers conservatively claim that with the new device a man and a half-grown boy can raise and market six hundred acres of wheat, which means that a tremendous saving in labour is effected.

The World's tallest Concrete Building finished.

The highest concrete building in the world is one recently finished in New York City. It stands on a site approximately 75 feet square and is eighteen stories high. From the basement to the top of the roof measures 230 feet. Work was begun in October, 1920, and on October 1 this year, was completed. The use of concrete required the taking of many precautions. To guard against freezing the concrete was delivered into the molds steaming hot, and the molds were kept sufficiently warm by means of special heaters. As one floor was molded every week care had to be taken to avoid excessive strains in the green concrete, and five successively completed floors were kept shored during the greater part of the time. The exterior surfaces of the building consist of white Portland cement and colored aggregates, including quartz, feldspar, and green stone chips, the lowest stories being finished by bush hammering and the sixteen upper stories by the aid of an electrically-driven carborundum grinding machine. The general effect of the surface treatment is said to be excellent. This promises to be the forerunner of many structures built of this material.

Deposits of iron ore have within recent months been brought to the Jamaica Government laboratory by quite a number of peasant cultivators from the hilly regions of the east-central districts of the island. Analytical results at the laboratory show that the deposits contain 80 per cent of iron. It has been decided to carry out a survey of the area from which the ore was taken.

Economic Notes

INDUSTRIAL, AGRICULTURAL, EDUCATIONAL AND GENERAL.

A Resolution of the Government of Bengal in the Irrigation Department, published in the *Calcutta Gazette*, gives the constitution of a Technical Committee formed in connection with the *Hydro-Electric Survey of Bengal*.

* * *

According to the Resolution of the Local Government on the Annual Progress Report of the Forest Department on forest administration in the *United Provinces* for the year 1920-21, the *resin industry* enjoyed a fairly favourable season, but was adversely affected by scarcity and dearness of labour. The gross trading profit amounted to Rs. 3,30,745, considerably more than double the total of the previous year. Some new machinery, which is expected to increase greatly the efficiency of the factory and to repay its own cost in two years, is still awaited from England.

* * *

By means of new shipping services provided by the Canadian Government Merchant Marine and by expanding her trade commissioner services, Canada, says "*The Times Trade Supplement*", is making strenuous efforts to increase her overseas commerce. The latest development in this direction is the appointment of a Trade Commissioner in India with headquarters in Calcutta. Major H. A. Chisholm, M. C., hitherto Canadian Trade Commissioner in Cuba, has just been nominated as the first commercial representative of the Dominion in India, and he will take up his new duties during the autumn.

* * *

More and more does the great achievement of Pennsylvania cause us to marvel. For instance:—After September 1, 1927, no person may be employed in any school in the state who does not show graduation from an approved college or university or an approved state normal school, or who does not furnish evidence of equivalent education. Provision was made for summer courses of nine weeks each in the thirteen state normal schools and in twelve of the colleges and universities of the state to enable those now in the service to obtain such further education and training as may be required to meet the standards set for 1927.

An effort is being made to encourage the sowing of hemp in the Prairie Provinces of Canada, with a view ultimately to producing there sufficient hemp from which to manufacture hemp fibre and products to replace those now imported. In 1920 there was sown in the vicinity of Winnipeg about 500 acres of hemp; tracts of land were also sown to hemp in the Provinces of Saskatchewan and Alberta, and in each locality good crops and good quality of hemp were produced. Owing to the shortness of the season in Western Canada, it is not anticipated that a sufficient quantity of seed will be grown there. According to the United States Consul-General at Winnipeg, seed is imported largely from Kentucky, but about 1,000 pounds will be imported this year directly from Italy.

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The results obtained from experimental steam ploughing in the Nagar District of the Bombay Presidency are not very convincing, although Mr. Schuttle, Agricultural Engineer, has pronounced the result as fairly good. Four hundred and twenty-seven acres of black cotton soil 16 inches to 18 inches deep were ploughed in all and the cost worked out at Rs. 30 per acre. Total receipts aggregated Rs. 12,823. The actual expenditure for fuel and oil charges and establishment charges for six months—assuming that the staff can be used for outside work in the off-season—was Rs. 11,705, thus allowing a net profit of Rs. 1,118 on the whole enterprise exclusive of interest and depreciation. Mr. Schuttle explains that the tackle used was not meant for deep ploughing and before operations are recommenced a radical change in the gear ratio will be effected with the help of the manufacturers. An important problem is how to utilize the tackle during the off-season and thus keep the engines employed for at least eight months instead of only four months out of the twelve; road-rolling, stone breaking, etc., are suggested. It is clear that further investigation and experimental work is necessary before steam-ploughing will prove attractive to private undertakings in this presidency.

There is an increasing market for powders for temperance drinks in the chief ports of China.

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An *International Tobacco Trade Exhibition and Conference* will be held at the Royal Agricultural Hall, London, N. I., from the 24th to 29th July, 1922. Persons requiring further information or complimentary tickets of admission should address the Organizing Director of the Exhibition at 22-24, Great Portland Street, London, W. 1.

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A London correspondent under date Nov. 24, says :—The death is announced of Mr. H. M. Hyndman, the veteran Socialist, who, for many years, in *Justice*, recounted the disabilities and sufferings under which, in less advanced days, India suffered, and from some of which afflictions even now she is not free. Among the many friends of India not the least was Mr. Hyndman, whose enthusiasm and sympathy were genuine and disinterested, whether one always agreed with his argument or accepted his facts, or not. He did an immense amount of propaganda work for the cause that he held dear, but never imagined that internationalism could, in the present stage of human evolution, replace a sane nationalism.

* * *

The needle's eye has undergone several changes of position since, in the dim past, it was invented and placed at the end away from the point (remarks *Everyday Science*). In the first form of sewing-machine the needle was made double-ended, and the eye was placed in the middle, and the idea of putting the eye close to the point was one of the first factors in making a really practical sewing machine. Now in the latest pattern of needle the eye has disappeared altogether. This is a surgical needle for sewing up human tissues after a wound or an operation. For such use a needle with an eye has never been entirely satisfactory because the doubled thread, through the eye and back again, inevitably made at one point a thickness different to the thickness of the rest of the needle. The blunt end of the new needle ends in a short tube, in which the end of the thread is permanently fixed, so that the surface of the needle is smooth and regular from end to end, and there is no longer any "pull" when the thread follows through the hole that the needle has pierced. The inventor, a London surgeon, has presented all rights in the new needle to the London Hospital.

A Press Communiqué, dated Delhi, the 21st November, says :—Under the Notification of the Government of India in the Department of Commerce, No. 650, dated the 3rd April 1920, a rebate of two-thirds of the duty on raw hides and skins exported to destinations within the Empire is allowed on the execution by the exporter of a bond guaranteeing payment of the remainder of the duty in the event of failure to produce, within six months from the date of shipment, a certificate from an authority designated for the purpose shewing that the raw hides or skins had been delivered to a tanner within the Empire. In view of the present position of the trade, the Government of India have instructed Collectors of Customs to allow exporters of raw hides and skins, shipped to destinations within the British Empire before 1st October 1920, three years from the date of shipment within which to produce the prescribed certificates.

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According to the statistics published in a recent number of the "Official Gazette" of the Government-General of Korea, the growth of cotton plants to the end of June this year, both before and after budding, was, on the whole, good owing to favourable weather, there having been considerable rainfall since the sowing season in all the provinces under Government encouragement for cotton planting. The area of germinated cotton in the ten provinces under cultivation amounted to 263,802 acres of upland cotton and 98,748 acres of native cotton, totalling 362,550 acres. This total, when compared with 1920 figures, shows an increase of 2,337 acres of upland, and 11,755 acres of native cotton, 14,092 acres in all. From experiments made on the Government model farms it has been found that the American variety of cotton known as "King's improved" is the best adapted to the south of Korea, and yields better results in spinning than the native variety. The area devoted to the cultivation of the foreign variety has steadily increased from 15,791 acres in 1912 to 263,802 acres in 1921, while the native variety has, in these years, shown a small decline from 109,382 acres to 97,748 acres. During 1920, 63,046 lb of cotton in the seed, valued at 2,466 yen, and 8,764,871 lb of ginned cotton valued at 6,002,786 yen were exported. Practically the whole went to Japan. Although the industry is developing, Korea is still dependent on supplies from abroad for the greater part of her cotton goods, the supplies coming partly from Japan.

In the First All-India Rice Forecast for 1921-22 issued on the 20th of October last, the area under *rice in Burma* for the present season was shown as 10,445,000 acres. In a subsequent report on the condition of the rice crop in Burma now received in the Department of Statistics the area has been revised and placed at 10,594,000 acres showing an increase of 149,000 acres over the estimate of last month. Heavy floods in the middle of October have resulted in a decrease in area likely to mature which is however larger than the area actually matured last year. Except in flooded tracts standing crops are reported to be in good condition; and the prospects are on the whole generally satisfactory. The total estimated area under rice for all the reporting provinces India (including the Hyderabad State, which has since reported for the first time this year an area of 489,000 acres under rice) thus stands at 74,770,000 acres instead of 74,132,000 acres published in the first forecast.

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A London correspondent writing under date November 24, says:—At this period of the year the normal tendency should be for the rate of the rupee to harden, but as a matter of fact for some weeks rupee exchange has displayed pronounced weakness, and now stands at the low figure, judged by the new standard, of 1s. 4½d. It is worth noting that the downward movement has coincided with the great depreciation of the mark. Germany was one of India's most important customers before the war, and had again begun to purchase a certain amount of produce, and it is to be presumed that the weakness of the rupee arises from the anticipation that unless something unexpected happens the German market may be practically closed to her for a long period because of Germany's inability to pay for commodities with the exchanges at their present rates. India is admittedly in an unfortunate position as a result of the war, for, besides the loss of the German market, other countries of Central Europe and Russia, who were substantial consumers of her produce, are no longer in a position to make purchases. This being so it is evident that the authorities were at least somewhat optimistic in standardising the rupee at 2s. If it does reach that rate it is unlikely to be for a very long time, and in view of the general outlook it would seem at least possible that the rupee may see a lower level than it has yet touched, particularly in view of India's requirements of machinery, and other similar commodities.

The California Institute of Technology at Pasadena becomes of international importance in the year 1921-22 by securing Dr. Robert A. Milliken as director of the Norman Bridge Laboratory of Physics, who will also be chairman of the Executive Council of the Institute. Dr. Milliken was the first scientist to succeed in isolating an electron, and has achieved scientific distinction in other ways. He will bring to the California Institute of Technology Professor H. A. Lorentz of the University of Leyden, Holland, as lecturer and research associate at the institute during the winter term of 1921-1922, and Dr. C. G. Darwin of Cambridge University, one of the foremost scientists of Great Britain, as Professor of Mathematical Physics for the year 1922-23. Professor Lorentz has been for many years professor at the University of Leyden, and is one of the leading mathematical physicists in the world. In 1902, the Nobel Prize for Physics was divided between him and his pupil, Zeeman. Professor Lorentz' great work has been as one of the developers of Maxwell's theory of the ether, and as a founder, with Thomson, of the electron theory. Dr. Darwin is the grandson of Charles Darwin and the son of Professor George Darwin, the astronomer, and his scientific accomplishments are maintaining the traditions of that great family.

* * *

According to a recent issue of *Revil* the French High Commissioner has decided to establish an experimental station for cotton culture in the Akkar plain, east-north-east of Tripoli, on land placed at his disposal by the Governor of the Greater Lebanon. This station will deal especially with questions concerning cotton cultivation, but it will also concern itself with matters affecting agriculture in general and cattle breeding. The construction of the necessary buildings and the installation of the station will be begun at once, and it is hoped that it will eventually become an important factor in the agricultural life of Syria. The idea is regarded as on right lines, and it is hoped that it will be speedily carried out. Syria is pre-eminently an agricultural country, and it is important that its agriculture should be developed in every way possible in order to stimulate exports and to reduce the, at present highly, unfavourable balance of trade. Cotton growing has undoubtedly possibilities, and although the prospects of Syria were affected severely by the war there seems no reason when conditions become normal why the favourable predictions made before the war should not be fulfilled.

Owing to foreign competition and difficulty in renewing plant, the timber and chemical industries of Rumania are working only 40 per cent of normal. Tariff protection in these, as well as the iron and steel industries, is under discussion.

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The Swedish Academy of Sciences has decided to award the Nobel Prize for Chemistry for 1920 to Professor Walter Nernst of Berlin. Professor Nernst has often been credited with having originated the application of poisonous gas in war, and he was one of the German savants who signed the famous manifesto of October 1914, defending the German Army's violation of Belgium. He is otherwise known as the inventor of the Nernst lamp, used in laboratories throughout the world.

* * *

The proceedings of the German Socialization Commission, before whom expert evidence is being heard as to the financial condition of the country, show that in the opinion of many German economists a solution of the Reparation problem is to be found in the alienation of capital assets. As it is generally agreed that Germany will not be in a position to meet her obligations by an excess of trade exports, the purpose of the Commission is to discover some method whereby means may be procured to settle the balance unprovided in the ordinary course of trade. In this connection it is suggested that the difference between the amount accruing from trade exports and the minimum required on reparation account should, for the next few years at any rate, be made good by the export of articles which do not ordinarily enter into trade, such as jewellery and objects of art in private or state possession, and by the increased participation in German industry of foreign capital, including the arrangement of credits at long term. The alienation of capital assets is regarded as an inevitable process in the circumstances in which Germany is placed. It is not explained how these capital assets are to become remunerative to the foreign holder. Unless he were content to receive interest in German paper marks he can only be paid by the sale abroad of the products of the industry in whose capital assets he is interested. But, *ex hypothesi*, the sale of German products abroad is supposed to have reached its limit and the owner of capital assets will be driven back to paper marks which he must expend in Germany on goods consumed in that country.

The Netherlands fishing industry is reported to be in such a depressed state that its future existence is threatened unless help from the Government is forthcoming.

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A London Correspondent, writing under date November 30, says:—The best bull point of the week in my opinion has been the suggested moratorium in connection with the reparations from Germany which has left the pound sterling worth 140 marks less. It has long been obvious that one of the greatest handicaps to trade revival has been the manufacture of paper marks and with that printing press out of commission and three years' grace in payment of claims there should follow the first essential to trade recovery — an improvement in the exchange. This should certainly please the Indian traders. The cry that payment shall be made to the "uttermost farthing" is being shouted down by the more insistent call for the re-establishment of international commerce on a possible basis. Once more it is shown how trade knows no international barriers and how interdependent all peoples are on free and unfettered markets, wars and no wars. There are some influences stronger than armies and one of them is the human need in the aggregate.

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Imports into Canada of manufactured silk goods are capable of great expansion, provided the requirements of the market are met, states H. M. Senior Trade Commissioner in Canada. Manufacturers will certainly find that Canadian buyers, both wholesale and retail, would gladly buy from the United Kingdom the goods which they are obtaining at the present time from foreign countries. The following articles have recently been specially mentioned to the writer:—hose, half-hose, underwear, shirts, blouses and ribbons. The last-named is of considerable importance, for importations into Canada for the past financial year were valued at 3,882,000 dols., of which only 635,000 dols. worth came from the United Kingdom. A noticeable fact was that last year United States exports of ribbons to Canada were practically halved, while those from Switzerland rose in value from 573,000 dols. in the year ending 31st March, 1920, to 1,813,000 dols. in the year under review. There is room for improvement in the presentation of certain silk manufacturers from the United Kingdom; for while the quality is undoubtedly in the goods, the articles lose somewhat in appearance though not being attractively boxed or otherwise packed.

Tea seems a harmless enough beverage ; yet if it is made wrongly, or drunk to excess, it can be a slow but deadly poison. Its stimulating effects are due to the presence in tea-leaves of a powerful drug called theine. If the pot is not allowed to stand too long, only a small quantity of this substance is dissolved out of the leaves of the hot water, and the tea refreshes us without doing any harm. When the tea-pot is allowed to remain for hours on the hob, an excessive quantity of theine is extracted from the leaves together with a larger amount of another semi-poisonous substance known as tannin. These two together form a real poison, affecting the nerves, the digestion and the general health. Stewed tea is almost as harmful as opium or cocaine. The habit of taking it in this way is soon formed, and the tea drunkard thinks nothing of consuming twenty or thirty cups a day.

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The arranging of a Trade Fair in Copenhagen has for a long time been under consideration where Danish industry and crafts should exhibit their products to an international public, states the *Scandinavian Shipping Gazette*. The chairman of the Danish Export Association recently stated that a meeting would shortly be held on the matter by a number of State and municipal institutions as well as trade organizations. Nothing definite can as yet be said about the question as this of course is bound up with various financial and other considerations which the future negotiations will have to survey. Copenhagen is, however, an eminently suitable town for such a fair, both on account of its size and its situation and therefore every endeavour was being made to surmount the various obstacles, so that at the meeting there might be complete agreement as to the arrangement of a Scandinavian Fair in Copenhagen.

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According to the Administration Report of the *Baroda State* (Bombay Presidency) for 1919-20 special inquiries were made of the possibilities of various *Industries* for which the State had raw materials. Samples of some of these were taken and got tested by the best experts and in some other cases experts were consulted or arrangements made with them to give opinion on preliminary reports prepared in India. Plans and estimates for machinery were also invited for some other Industries and Consulting Chemists and Engineers were referred to on some of the problems. Permanent arrangements were made with some of them and with the Imperial

Institute, London, to assist the Department in the work. Among the subjects investigated were cement, wood-distillation, alkali manufacture, china clay refining, pottery, glass manufacture, tanning and tanning extracts, lactose manufacture, chank sawing, oil crushing and refining. The information collected was placed at the disposal of the persons interested in the Industries which in many cases proved of great value. The Department besides adopting the methods and inquiries hitherto followed has undertaken to make a thorough inquiry of the materials available in the State and the preparation of full project reports on their development on a commercial scale. It was also decided to give similar assistance to industrialists. On account of the industrial boon several new companies were promoted during the year and in a number of cases it was found that the necessary preliminary investigation was not made. As a matter of fact, very few of them realized the necessity of this. Moreover, several capitalists from Bombay and Ahmedabad were anxious to start some industries which needed the facilities for a thorough preliminary investigation by experts. In order that this important but necessary inquiry may be properly conducted and that industries may be started after a thorough investigation of its possibilities — technical and financial — Government were approached to sanction a scheme by which this Department may undertake inquiries in co-operation with the promoter and bear half the expenses of the initial cost, the other half being paid by the promoter; If the inquiry resulted in the starting of the Industry, the expenses were to be charged to it and if the project failed, the State and the promoter would bear the losses. Only such projects would be investigated which a general inquiry by the Department warranted in the first instance. In order to carry out this policy, Government was pleased to set apart rupees twenty-five thousand for the purpose. To assist the Department in this scheme the Tata Engineering Company, Limited, were appointed Consulting Engineers to the Department. During the course of the year several inquiries were entrusted to them.

* * *

By the addition of the new territories the industrial capacity of Old Rumania has been increased about 140 per cent, taking the number of horse-power as the standard. The total horsepower in Old Rumania is 206,434, and 481,017 in the new territories.



Economic Gleanings



WORLD'S PROGRESS IN FEW WORDS.

As a result of an increase in railway freight rates. German cement prices have been raised.

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Among the commodities which are being shipped from Jamaica to Germany is coconut fibre. This is a new item in the list of exports from the island.

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It is understood that a large new fruit canning and packing company will shortly be established at Port Elizabeth. English capital is said to be interested.

* * *

Goods arrived at the port of Genoa from January to September this year totalled only 2,968,500 tons, against 4,617,500 tons during the same period of 1920.

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In order to encourage the sugar industry in St. Vincent a moderate-sized central factory is to be erected in the Windward district of the colony. The machinery has already arrived in the island.

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West Indian Chambers of Commerce are moving in the matter of securing a reduction of freight rates to and from Canadian ports. A joint request is to be made to the Canadian shipping authorities on the subject.

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Exports from Yugo-Slavia during the first quarter of 1921 totalled 569,000,000 dinar in value, against 228,000,000 in the first quarter of 1920. Nearly 50 per cent went to Austria and 17.18 per cent to Italy.

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Work has been started on the new docks at Casablanca. Traffic at the port amounted to 50,387 tons in September, of which 34,070 tons represent exports, chiefly of cereals. In August the total was only 41,372 tons.

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Sub-committees of the Porto Rose Conference have reported in favour of improving the telegraphic communications between Vienna and Belgrade and Bukarest and of introducing direct international goods and passenger tariffs on railways.

For the six months ended September 30 the total volume of Canadian trade was \$721,626,839, as against \$1,274,878,502 in the corresponding period of the previous year. The imports were \$378,731,366, and the exports \$335,677,131.

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German tire manufacturers have decided to raise prices of pneumatic and solid automobile tires and motor-bicycle and pedal bicycle tires by 45 per cent owing to the heavy increase in costs of production brought about by the depreciation of the mark.

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Receipts on the Belgian railways for the first six months of 1921 totalled 471 million francs, as against 346 million for the corresponding period of 1920. This is particularly satisfactory when it is remembered that 1920 was a good year and 1921 a time of depression.

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Morocco is likely to have an excellent almond season this year. The quantities gathered are considerable, and they are competing with the Spanish and Italian products, the greater part being exported to Marseilles and London. Prices are about 295f. a cwt.

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Experiments made in Mauritius connected with the utilization of exhausted molasses show that 75 per cent of the sugar fermented can be converted into power alcohol. It is believed that this yield will be considerably increased by the use of selected strains of yeast.

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Final surveys are being made in some of the central districts of Jamaica for the extension of the railway, for which purpose a Bill to raise a loan in England was recently passed by the Legislature. The building of the railway will be under way by the beginning of 1922.

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A representative of a British firm formed to grow and can pineapples in Ceylon is expected to land at Colombo shortly. He will make preliminary arrangements with the Government. One of the main objects of the syndicate is said to be the employment of British ex-officers.

The Government of British Guiana has given authority to the Harbour Board to arrange for the expenditure of \$300,000 to improve the harbour of Georgetown. Opposition has been encountered from business men on the ground that this is not the time to carry out such an undertaking.

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Mr. T. R. Lees, the head of the Imperial Supplies Department, and the chairman of the New Zealand Wool Committee, is to be sent to London on a special mission for the New Zealand Government, to investigate the marketing and distributing arrangements for New Zealand produce.

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The largest dye works in Jamaica, which had been closed for some months owing to the slump in trade, are again in operation. During the time the works were closed improved machinery was installed, a turbine plant to generate electricity from a stream being put in position to replace a steam plant.

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In South Australia the average wage paid to adult males in industries covered by determinations of Wages Boards during 1920 was £4 6s. 7d., as against £3 18s. 7d. in 1919; and that to adult females £1 18s. 4d., as against £1 12s. 9d., an increase of 10·18 per cent and 17·05 per cent respectively.

* * *

Holland's sixth Industries Fair will be held at Utrecht from February 21 to March 3, 1922. The new permanent building is 360 feet long and 240 feet wide and has five floors. At the September Fair 1,508 firms exhibited, as compared with 1,046 in the spring of 1920. Germany accounted for 265 and Britain 105.

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It is announced that the new steamers of the Commonwealth Government line, such as the Moreton Bay, 12,500 tons, will call at Hobart every four weeks on route to London, beginning at the end of January or early in February, and in the fruit season will carry large shipments of fruit to the United Kingdom.

* * *

United States farmers complain of the fall in prices of wheat, cattle, and hogs. In many cases prices are said to be lower than at any time for 10 years before the war. By all classes it is feared that the Fordney tariff will cut off more foreign customers and make it difficult to find an outlet for the surplus supplies of the farms and factories.

An Italian Chamber of Commerce has recently been established in Amsterdam.

* * *

Marseilles possesses 30 oilseed-crushing concerns owning 48 mills and about 2,000 presses. The oilseed imports represent 60 per cent of the total French imports of these products, the principal oil-yielding materials being peanuts, shelled and unshelled, and copra. This takes no account of olive oil production.

* * *

Manchuria offers a market for railway materials, electrical equipment, hardware, chemicals, cotton yarns, paper, soaps, and toilet articles, etc. The Mukden Press, commenting upon the expansion of Japanese trade in the province, states that Japanese commercial associations are being formed in Harbin, Dairen, and other large cities.

* * *

During the month of September imports from overseas into Italy fell by over 162,500 tons compared with August, the total being 985,000 tons. This was made up principally as follows: Coal, 626,000 tons (United Kingdom, 445,000); cereals, 199,000 tons (110,000 from North America); metals, 832 tons (200 from United Kingdom).

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Algeria's imports from Britain during the first nine months of this year included 194,290 tons of coal, 406 tons of tar, and 18,066 tons of general merchandise. Amongst the last named were 56 tons printed cotton tissues, 205 tons iron (manufactured), 239 tons machinery, 13 tons heavy oil, and 844 tons copper and iron sulphate.

* * *

The contract agreed upon by the Czechoslovak Government and the Standard Oil Company for the prospecting and exploitation of oil fields has been taken to Paris to be signed. A rich oil well has been struck at Egbeil, in Slovakia, where a new boring produced a spurt 250 ft. high. This well is State-owned and not included in the Standard agreement.

* * *

It is hoped that a large wireless station at Elisabethville will be in direct communication with Belgium in 1923. The Belgian Congo uses wireless telegraphy to a very great extent and possesses a series of stations at Coquilhatville, Lisala, Stanleyville, Cogolo, Kikonda, Elisabethville, Basoko, Banankam, Kinshasa, Lukunga, Bunia-Kilo, etc. There are altogether 15 stations each able to take a maximum of 25,000 words a month.



Economic Reviews Reviewed

WITH EXCERPTS AND COMMENTS.



Stabilization of Exchanges.

Suggested a plan for a New International Currency, Mr. I. Osterer, writing in the *Times' Trade Supplement*, says:—

When we buy goods we have to pay with something acceptable to the seller. That something must be the equivalent to the seller of so many commodities at that date. That is to say, he must be paid in the currency of his own country or in gold.

For simplicity, let us assume that every seller has purchased the commodity he offers, whether raw material or manufactured article, not in the foreign country where he sells, but elsewhere. It, therefore, becomes imperative to be able to buy and sell in terms of a common denominator.

In 1913 gold was a universal alternative medium for making payments in any country, and was therefore actually a common denominator between currencies. The 1913 state of affairs was clearly very much in advance of the position to-day, from an international trading point of view. Before, therefore, attempting a step forward towards an economic Utopia we had better try to get back to the 1913 position.

As in 1913, gold is to-day universally acceptable as a medium for payments, but adverse trade balances have become so enormous that they cannot actually be paid in gold. Debtor nations are forced, therefore, to bid for the currency of the creditor nations as the sole available medium for payment for goods. Before the war, debtor nations did not bid for the currency of creditor nations beyond the point where it became cheaper to pay by shipment of gold. The inability to-day to ship gold in payment of international balances has resulted in the rapid fluctuations in rates of currency exchange, and exaggerated disparities of currency values, which are making international trade highly speculative if not impossible. In other words, international trade has come under the influence of speculation in currency, a speculation no longer limited by the restrictive influence of the power to ship gold.

It will be understood, therefore, that the rapidly fluctuating rates of exchange and the exaggerated disparities of currency values are symptoms of economic diseases, contracted sometime ago, and daily becoming intensified by lack of proper treatment; and that the international currency exchanges can only be restored to normal by treatment of the diseases.

THE GREAT DESIDERATUM.

The important point is to get stabilized exchanges for new commercial transactions, and this can undoubtedly be effected. In other words, these economic diseases can in the first place be segregated, and isolated from the commercial portion of the body politic although a complete cure may of necessity be a gradual and painful process.

There is only one method of arriving at the desired end—stable commercial exchanges: and that is by re-establishing gold as an effective common denominator between currencies over as wide an area as possible.

To enable this to be done, there is one essential innovation—namely, that Governments, through their national banks, should undertake the supply of gold credit against deliveries of their own currency, and the supply of their own currency against gold credit. This innovation would require one addition to existing institutions, an international exchange bank, acting as a clearing house for international transactions, and dealing only with national banks.

This bank should offer to every country its facilities to such extent as each could comply with the required conditions. At first some countries might not be able to comply at all; others might be able to comply for a part or all of their new commercial transactions; while others might be able easily (as the United States), or with difficulty (as the United Kingdom), to comply for all international transactions. However small the beginning, there would at least be an institution which restricted itself to transactions in terms of gold; and the relative solvency or progress towards solvency, of the nations would be registered automatically by the nature and extent of their connexion with the international bank.

NEW SYSTEM OUTLINED.

Let us now outline the framework of the new system so that as we proceed the two systems may be compared. There must be—

1. An international Exchange Bank, registering international transactions in bulk (*i. e.*, concentrated through the national banks), and only dealing on behalf of nations having a gold deposit or approved gold credit with it. This bank would for its peculiar functions stand in the same position to the Bank of England as the Bank of England does to the joint stock banks. It would at its own discretion make to the national banks loans guaranteed by their governments.

2. A fixed ratio of each currency to gold, such ratio to be agreed by the bank with each respective Government, so that every international currency transaction could automatically be registered by corresponding entries in the bank's books in terms of gold.

3. An undertaking by each Government to supply its own currency without limit against gold credits at the international bank.

4. An undertaking by each Government to supply a gold credit at the international bank, against delivery of its own currency. The ability of the Governments in this respect would be limited by the extent of their gold credit at the international bank, including their loans from it.

Universal convertibility of all currencies into the equivalent of gold being established there would be no further necessity to maintain the principle of internal convertibility into gold.—The national banks

would therefore be able to make considerable deposits of gold at the international bank.

Note 1.—There would be no disadvantage to a person in Britain in being unable to exchange his notes for sovereigns, as his notes would have a world-wide buying value.

Note 2.—At first the convertibility of each currency would be limited by the ability of each Government to maintain the necessary balance at the international bank. For instance, the United States would be able to establish unrestricted convertibility immediately. The United Kingdom might also do so. Probably many countries would have to be content with convertibility qualified in ratio to their economic positions and efforts towards solvency.

Under the present exchange system many European countries having become unable to pay adverse trade balances in gold are in the position of having large sections of their currency held by foreigners. The case of Britain and America is a case in point and may be cited.

Since about 1914 Britain has been accumulating an adverse trade balance with the United States, a large portion of which has been met by the sale of securities and by borrowing in America. It has been impossible to pay even the net balance in gold and this has necessarily been met by the sale of sterling to an unknown extent. This position is a potential source of economic danger whether under the present or the proposed system.

ECONOMIC DANGERS.

Under the present system a sudden loss of confidence resulting in the offering for sale *en masse* of this American-held sterling would result in a temporary demoralization of the dollar sterling exchange and a corresponding demoralization of commodity markets. In fact, even without an offering *en masse*, the very existence of this American-held sterling under the present system postulates an enormous number of potential sellers, affecting our exchange continuously quite apart from the balance of current commercial transactions.

Under the new system an offering *en masse* would be unpleasant, but not nearly to the same extent. Being forced to meet this mass of sterling by a gold credit at the international bank it is conceivable that the British Government might find itself with both deposit and credit at the international bank completely exhausted. They would, however, receive a corresponding mass of sterling delivered internally which would constitute a reduction of internal liability. It would therefore be commercially sound for the international bank to grant an additional credit under these circumstances, at any rate for some part of the amount, to enable ordinary commercial transactions to be continued.

Assuming, in fact, that this mass of sterling were presented for conversion, under the present system the result would be the upsetting of all commodity transactions current between the two countries, while under the proposed system current commodity transactions would in no way be affected.

This difficulty of foreign held currency would affect every debtor nation in ratio to its economic position. We have assumed that Britain could meet the total liability immediately by a special effort. This special effort might include even the mobilizing of our saleable American securities, as was done during the war. Some countries might temporarily have to restrict the conversion of their own currency to purely commercial transactions—i.e., for the purchase of goods only. Between these two extremes there would be

countries converting their currency more freely or less freely according to their circumstances.

Note.—Just as in pre-war days we consistently invested in U. S. securities on a basis of confidence, there is little doubt but that large sections of this American-held sterling, particularly under the new system and over a period of time, would become permanently invested here.

GOLD PAYMENTS.

It has been stated that there must be maintained a fixed ratio of every currency to gold. To enable this to be done all adverse balances would have to be paid in gold. That is to say that any country which had exhausted her credit at the International Bank would only be able to purchase commodities to the value of her sales in terms of gold until she had acquired a fresh balance at the Bank.

Note.—Adverse trade balances now actually accumulating are comparatively small.

The existence of a fixed ratio between each currency and gold obviously results in a fixed rate of exchange between currency and currency. This would be no great innovation. Prior to the war the exchanges were kept within a restricted area of fluctuation by the power to ship gold, and this area was so restricted that many commercial documents were printed with a fixed rate of exchange, each party agreeing to ignore the rise or fall. This state of affairs between principal currencies did frequently continue without interruption for considerable periods.

Under the new system sterling currency will no longer be convertible into gold in the pre-war sense that any holder of a £5 note could demand five sovereigns; but it will be convertible into the equivalent of gold in the sense that payments will be practicable in any part of the world, just as though there were physical possession of gold (subject to British credit at the International Bank).

There might be some difficulty in agreeing to the fixed ratio of each currency to gold, but probably this would be the best left to an international committee, who would doubtless adopt approximately the ratio suggested by current rates of exchange, with the object of eliminating unnecessary disturbance of commodity prices.

No system of exchange could, however, be adopted and maintained which was dependent upon an accurate preliminary calculation of these ratios; and it can be demonstrated that each country could adopt its own ratio without ultimate injury to other countries or to themselves—e. g., if exchange London-New York were fixed to-day at \$4.86 to £1, all commodities here would become dearer in terms of dollars. As a result America would buy less here, and we should buy more in U. S. A., as goods there would cost us less in terms of sterling.

Our balance at the International Bank would become correspondingly depleted, and we should have to find methods of reducing prices here to create buyers. Restriction of credit here allied with rising prices in the States (due to our demand for their goods) would in a reasonable space of time rectify the position but the movements in prices would be too violent to be considered pleasant.

Incidentally we should never dream of fixing our exchange above to-day's parity, because of the creation of potential sellers of sterling held by Americans.

To summarize the important points:—

1. Present system:—Fluctuations in commodity prices *plus* fluctuations in currency values.

New system:—Fluctuations in commodity prices only.

2. Present system:—Under existing conditions impossible to attract balances by raising the rate of discount.

New system:—Certainly possible to attract balances.

3. Present system:—Our international trading position can become dangerous without proper warning.

New system:—Proper warning provided by International Bank balance.

4. Present system:—Cost of transfer *plus* risk of fluctuation in exchanging currencies.

New system:—Standard cost of transfer only.

5. New system:—The nation mobilizes its gold resources for collective strength in international trade.

While it is unnecessary to weary readers of this article with innumerable examples, the advantages of the new system can be demonstrated in one simple illustration:—

Exchange \$4 = £1.

We buy 20,000,000 lb. cotton = \$4,000,000 at \$1/5th per lb.

We sell 20,000,00 lb. wool = \$4,000,000 at 1s. per lb. = £1,000,000.

Therefore, at \$4 to the £1 1 lb. of cotton exchanges for 1 lb. wool at 1s. per lb. and cotton at \$1/5th per lb.

We then buy:—

40,000,000 lb. cotton at \$1/5th per lb. = \$8,000,000 = £2,000,000.

and sell:—

20,000,000 lb. wool at 1s. per lb. = \$4,000,000 = £1,000,000.

Result:—Adverse trade balance \$4,000,000. *Fluctuation of exchange caused by purchasing the balance dollars necessarily purchased to pay for the balance of 20,000,000 lb. cotton during its fluctuation from \$4 to say, \$3.75 to the £1 is ignored.*

New exchange \$3.75 = £1.

We buy 18,750,000 lb. cotton at \$1/5th per lb. = \$3,750,000.

We sell 20,000,000 lb. wool at 1s. per lb. = \$3,750,000 = £1,000,000.

Result:—

Because exchange moves from \$4 to the £1 to \$3.75 to the £1 we receive 18,750,000 lb. cotton in exchange for 20,000,000 lb. wool, instead of receiving 20,000,000 lb. cotton. [Note.—Against this, of course, there are other considerations, such as curtailment of imports and stimulation of exports, but it is unnecessary to follow out this theme any further.]

Once prices have adjusted themselves to the fixed ratios of exchange, under the new system, so far as these may differ from the ratios on the day of fixture the interchangeable value of cotton and wool will be constant in the sense of being freed from the influence of the currency market. These commodities will, of course, like all others, remain subject to the laws of supply and demand.

Under the old system as shown above, the interchangeable value of these commodities would continue to fluctuate in sympathy with the movements of the currency market.

Manufacture of Celotex from Bagasse.

The *Louisiana Planter and Sugar Manufacturer* of 3rd September, 1920, publishes an article on the manufacture of Celotex from bagasse. Celotex is a species of artificial building board, and though reported to be

much lighter, can be sawed and worked like lumber. It is, besides, solid and homogeneous and capable of being used for inside or outside use in constructing houses.

The value of sugarcane bagasse as fuel is, of course, a long established fact. The very fact that it possessed this value and that the exhausted cane 'chips' from the diffusion process could not be burnt, was the deciding factor that eliminated diffusion as a method of cane juice extraction. The manufacture of paper from bagasse has been attempted, but, as far as our information extends, never successfully, in an industrial way. The fibre of bagasse does not seem exactly suitable for paper making purposes, the paper made from it being brittle and lacking toughness. Besides, the value of the bagasse as fuel, estimated theoretically but not industrially, by Professor Kerr, at 8,370 B.T.U. per pound in the case of perfectly dry bagasse, rendered it difficult for the paper manufacturers to procure the bagasse at a price that would make their paper-making venture profitable. Of course, the actual fuel value of the wet bagasse coming from the mills is very much less than this because of the high amount of moisture it contains.

An opportunity to utilize bagasse more profitably than as a fuel has presented itself through the enterprise of a certain gentleman connected with large paper-making interests in Minnesota and Canada who have come forward with a proposition to take the bagasse at a price that exceeds its fuel value and manufacture it, not into paper, but into a species of artificial building board known as Celotex. The project has reached the stage of practical operation, and there is now at Marrero, La., opposite New Orleans, a plant costing half a million dollars, and so arranged that it can be enlarged to six times its present capacity for manufacturing this material. It began operations on Thursday of last week and as an initial feat turned out a 'plank' of Celotex 900 feet long, enough to build several small houses. These huge 'boards' when finished, are cut up into any desired sizes.

The plant is similar in many respects to the paper mill of to-day and most of its operations are modified forms of those carried out in the paper industry. The bagasse is 'chipped', 'cooked,' and 'washed' in succession, the last two operations being carried out in a single machine especially designed for this type of material. The pulp is then sent to the 'beaters' where it is worked until the fibres are of the proper length. This refined pulp is next run through a machine of special patented design which forms the board, this machine being capable of turning out a board twelve feet wide.

One of the most unique features of the plant is the long drying system. As the board, after being formed leaves the last of the press rolls, which rid it of a great deal of water, it enters what might be called an oven. This consists of a closed, heat insulated, sheet iron tunnel twelve feet wide, eight hundred feet long and about eighteen inches deep. Inside this tunnel is a layer of steam coils and the rollers upon which the endless belt carries the board. The steam pipes are all in the same plane, parallel to the ground, and form a sort of bottom. As the damp board coming from the machine enters the dryer, steam is fed into the first few coils and as a result a large percentage of the moisture is removed.

By the time the board reaches the end of the dryer (some four hours from the time it enters) it has lost all its moisture and has become quite hard. As it leaves the dryer it is cut by saws which move

with the same velocity as that of the board, into eight-foot lengths as a standard, or into other lengths required. The arrangement of these movable saws is quite ingenious, for to adjust them to the speed of the board was quite a problem for the designer. After being cut to the proper sizes the slabs are packed, or baled, in the "finishing room" as is paper, and they are then ready to be put to any one of their innumerable uses."

Resuscitation of French Sugar Factories.

The following note on the resuscitation of French sugar factories is from the *Louisiana Planter and Sugar Manufacturer* of 3rd September, 1921 :—

The resuscitation of the French sugar factories goes on apace. As they were located chiefly in the devastated regions of France and as a large portion of them was totally destroyed, it has thus far been difficult if not impossible, to ascertain how many factories are owned by personal owners and how many by corporations, which increases the difficulty in securing information. As all parties are interested in the possible sugar beet crop and the data that come to hand indicate probable supplies varying from 5 to 50 per cent of the factories' total requirements. The Official statistics for last year indicate 72 sugar factories which produced 314,000 metric tons of sugar, as against 60 factories the year before, shipping 161,000 tons. Before the war there were 213 sugar factories working, which produced 865,000 metric tons of sugar in the season 1912-13. The capacity of the French sugar factories varies very widely, ranging all the way from a capacity of 4,000 tons of beets per day down to a minimum of 125 tons. The beet contracts are usually made for one year, but there are some exceptions in contracts which are on long terms. The price of beets is regulated according to their quality as determined by the usual sugar factory process. A "rule of thumb" has been utilized to some extent and that is that one per cent of density equals a yield of 2 per cent of sugar. If the basis price is calculated at $7\frac{1}{2}$ per cent density the theoretical equivalent of a final 15 per cent of sugars gives it a value depending upon the market price of sugar. For each degree or fraction of a degree above the basis figure an increased price is given and a decreased price where the basic density is not reached. Contracts ordinarily provide for a minimum density of 6 to $6\frac{1}{2}$ per cent, presumed to yield 12 to 13 per cent of sugar and beets inferior in quality to these minimum limits may be refused by the sugar factories, and we suppose then go to the distillers.

Commercial Utilization of Cotton stalks.

The following article is taken from the current number of the *Bulletin of the Imperial Institute*, London (Volume XIX, No. 1 of 1921) :—

The question of the most economical methods of disposing of the enormous quantities of cotton stalks which are left after the crop has been harvested is one that has received much attention. The destruction of the stalks is particularly important if they are liable to harbour insect pests, which might otherwise be carried over from one season to the next.

It is usual in most cotton-growing countries to use the cotton stalks as fuel, and their utilization in any other direction would therefore depend on their local value for this purpose.

The bark of cotton stalks contain a fibre of a character somewhat resembling that of jute. Trials were made some years ago in the United States to extract this fibre on a commercial scale, and a decorticating machine was used which was capable of being worked in the cotton field, thus obviating the transport of the stalks to a mill. Five tons of the stalks gave one ton of bark, yielding 1,500 lb. of fibre, which was said to be suitable for the manufacture of bagging for cotton bales. The preparation of the fibre did not prove commercially successful, owing to the difficulty of devising a machine which would satisfactorily work up the rough, irregular material.

Experiments have also been made in Egypt on the possibility of utilizing cotton stalks as a source of fibre and small samples of fibre, some long and some short, prepared by a special process, have been examined at the Imperial Institute. It was considered that the longer fibre might possibly be employed as a substitute for the lower grades of Indian jute and, if found suitable for this purpose, would probably realize rather less than half the price of Bengal jute. The shorter fibre might be used for stuffing upholstery or for paper-making.

It seems very unlikely that the extraction of fibre from the bark of the stalks would be profitable, as the work involved in handling and retting the stalks and preparing the fibre would not be repaid by the price obtainable for the product. In this connection it may be roughly estimated that with a yield of 1,000 lb. of stalks per acre, it would be necessary to collect and treat the stalks from 10 acres to obtain half ton of fibre, the value of which would be only about half that of Bengal jute.

Trials with cotton stalks as a paper-making material have been made at the Imperial Institute, and also in the United States. The trials carried out by the United States Department of Agriculture showed that the stalks require somewhat severe treatment. The yield of pulp varied from 35 to 43 per cent and the fibre was said to be short and weak. With this yield of pulp, and the estimated production of stalks of 1,000 lb. per acre, it would need the stalks from at least 5 acres to produce 1 ton of pulp. The pulp was found difficult to bleach on account of its dark outer bark, and the results, on the whole, were not regarded as encouraging. The results of the trials at the Imperial Institute, detailed particulars of which are given in succeeding pages, were, however, more promising. In this connection it is of interest that a satisfactory method of working cotton stalks has now been devised in the United States, and that in 1917 it was reported that a company has been formed in Dallas, Texas, to manufacture paper from this material.

Experiments have been made in Egypt on the possibility of employing cotton stalks for the manufacture of charcoal, methyl alcohol, acetate of lime and other products of destructive distillation. Samples of charcoal, methyl alcohol, acetate of lime and tar obtained in these experiments have been examined at the Imperial Institute. The charcoal was of loose texture, unusually high in ash, and of low calorific value. The methyl alcohol and acetate of lime were of good quality, and would be readily saleable. The tar, however, resembled that obtained from hardwood, and would probably be difficult to dispose of in the United Kingdom.

Preliminary trials have also been made at the Imperial Institute to determine the yield and nature of the products obtainable from the stalks by dry

distillation, and the results of these will be found in the succeeding pages.

PAPER-MAKING TRIALS WITH COTTON STALKS.

Cotton stalks from the Punjab and the Central Provinces, India, have been examined recently at the Imperial Institute. Those from the former Province were from 5 ft. to 7 ft. in length and had a diameter at the base of $\frac{5}{8}$ inch to $\frac{7}{8}$ inch. They were fairly hard and woody, were covered with a brown, rather fibrous bark, and had a narrow, pithy core. The stalks from the Central Provinces were similar, but were thinner, varying in diameter from $\frac{1}{4}$ to $\frac{1}{2}$ inch. All the stalks were devoid of leaves.

The ultimate fibres measured from 0.5 to 1.0 mm. in the case of stalks from the Central Provinces, and from 0.6 to 1.2 mm. in the case of those from the Punjab, the average in both cases being 0.8 mm.

The stalks were treated with caustic soda under conditions similar to those employed in the manufacture of paper on a commercial scale, with the following results, which are expressed on the material as received :—

The stalks were examined with the following results :—

		Stalks from the Central Provinces.	Stalks from the Punjab.
		Per cent	Per cent
Moisture	..	10.2	10.7
Cellulose	..	44.1*	40.3†
Ash	..	2.6	3.0

* Equivalent to a yield of 49.1 per cent from the dry material.

† Equivalent to a yield of 45.1 per cent from the dry material.

Stalks from —	Expt.	Caustic soda used		Conditions of boiling		Parts of soda consumed per 100 parts of stalks	Yield of dry pulp
		Parts per 100 parts of stalks	Parts per 100 parts of solution	Time	Temp.		
				Hours	°C		Per cent
Central Provinces ..	A	16	4	8	160	11.8	41
	B	16	4	10	160	13.0	40
	C	22	5	9	160	14.6	37.5
Punjab ..	—	22	5	9	160	14.6	34

These results show that the stalks from the Central Provinces, when treated with 16 per cent of caustic soda, furnished a moderately good yield of pulp, which, however, did not break up completely or bleach very well.

A satisfactory pulp was obtained from the stalks from both the Punjab and Central Provinces by employing 22 per cent of caustic soda. In each case the pulp bleached to a pale cream colour, and furnished a moderately strong paper of fair quality. The yield of pulp in these trials was, however, rather low.

The stalks from the Central Provinces were also treated by the sulphite process for four hours at a temperature of 140° C., and yielded 40 per cent of dry pulp, expressed on the dry stalks. The material was readily broken up by comparatively mild treatment, but the pulp produced was very dark and could not be satisfactorily bleached ; moreover, it furnished a paper of poor strength and quality. These attempts to produce a satisfactory pulp by the sulphite process were not successful, as the treatment, though mild, was found to weaken, and partially decompose the wood-fibre of the stalks.

The results of the investigation show that, when treated by the caustic soda process, these Indian cotton stalks yield paper pulp of fair quality, which can be bleached to a pale cream tint. The yield of pulp is rather low, and it is necessary to employ larger quantities of caustic soda than in the case of esparto and similar grasses, but the results are suffi-

ciently promising to justify further consideration.

In connection with the possible utilization of the stalks for paper-making in India, there are several points which need investigation. One of the most important is the cost of collecting the stalks from the field and conveying them to the factory. On account of the bulky nature of the material, it would be essential for the factory to be situated in a locality where large supplies of the stalks are available at a minimum cost for transport, and it would be necessary to have an ample supply of water and facilities for the transport of the pulp to the paper factory. The cost of the necessary fuel and chemicals would also have to be ascertained. In addition, it would be advisable to have large scale trials carried out, preferably in India if this could be arranged, in order to determine the results obtainable on treating the stalks on a commercial scale.

DISTILLATION TRIALS WITH COTTON STALKS.

Preliminary trials have been carried out recently at the Imperial Institute with a view to determining the possibility of utilizing cotton stalks for the production of charcoal, pyroligneous acid and other products by the process of dry distillation. The stalks used came from the Central Provinces, India. The results, expressed in percentages by weight on the stalks received, are shown in the following table, which also includes for comparison the corresponding figures recorded for wood :

	Present sample cotton stalks	"Hard-wood" (1)	"Wood" (2)
Weight of material distilled	3 lb.	—	—
Time required for distillation	3 hrs. 35 min.	—	—
	Per cent	Per cent	Per cent
Charcoal	35.4	25 to 27	29
Crude pyroligneous acid	41.1	45 to 50	4½
Containing :			
Acetic acid	3.0	3 to 4	—
Dissolved tar	2.6	3.5	4
Crude wood naphtha (100 per cent)	1.5	1.5 to 2 (80 per cent)	1.25
Tar, separated	7.6	—	6.5
Containing :			
Acetic acid	0.4	—	—
Total yield of tar	10.2	—	10.5
Total yield of acetic acid	3.4	—	3.75

The tar obtained was fairly thin, readily a mobile liquid of brownish-black colour.

The distillation produced inflammable gases (which were burnt as a supplementary fuel under the retort) and yielded a soft charcoal, which broke fair easily. The charcoal when ground to powder, did not compare favourably as regards texture and colour with either lamp-black or carbon black, and it would rank only as a fuel charcoal.

The yield of acetic acid is rather below the average quantity obtained from hard-woods, but the yield of wood naphtha is about normal.

The feasibility of distilling cotton stalks successfully in India would depend on finding local markets for the products particularly the charcoal and tar. There is a large demand in the East for acetic acid, and possibly the wood naphtha would find a market in India. The tar could be employed for creosoting purposes and the charcoal as a fuel.

Regarding the cost of distillation, it may be pointed out that, as cotton stalks are bulky materials, they would require large retorts even if they were cut into pieces and compressed before treatment.

Giant Grasses for Paper-Making.

Hitherto tropical and sub-tropical countries have relied mainly for their supplies of paper-making materials on the forests of the northern temperate regions. Wood pulp, prepared from spruce and other timbers in the United States, Canada and Scandinavia, is, for example, imported into India and Australia for the manufacture of the cheaper kinds of paper, whilst countries, such as those of tropical Africa, in which manufacturing industries are in a less advanced state, import practically all their paper ready-made. In almost all these countries, however, there are native products which could be used for making paper, and in some cases a survey of the materials available is being undertaken. Bamboos appear to be the most promising source of paper-pulp in India and the Far East, whilst in other countries large grasses, many of which are similar to bamboos in appearance, exist over extensive areas and could be used for the same purpose. In the current number of the *Bulletin of the*

Imperial Institute a comprehensive account is given of these giant grasses. Preliminary trials have proved that many of them give a satisfactory yield of pulp, which produces good paper. In the case of the so-called Elephant grass of eastern tropical Africa, these results have been confirmed by large-scale trials and the material has been used in Uganda for Government printing paper, which is of excellent quality. Such grasses, owing to their bulk, could not be exported to Europe at a profit, but it is suggested that they might be employed locally for paper-making or for conversion into pulp for export.

Insect Pests of Raw Cocoa.

Most foodstuffs when stored are liable to be attacked by insects, and the damage thus caused amounts in the aggregate to millions of pounds every year. Perhaps the best known pest of this kind is the grain weevil, which destroys enormous quantities of wheat and other cereals, particularly in countries, such as Australia and Canada, where vast stocks of grain are stored while awaiting shipment. The depredations of such insects extend even to raw cocoa and it has been estimated that the proportion of "grubby" beans in the world's production of cocoa is on the average from one to two per cent. This subject was considered at the Rubber and Allied Industries Exhibition, held in London this year, when Mr. A. W. Knapp of Messrs. Cadbury Bros., Ltd., read an interesting paper on Insect Pests in the Cocoa Store, which is also printed in the current number of the *Bulletin of the Imperial Institute*. The most frequent pests are the caterpillars of small moths, particularly those of the Mediterranean flour moth, which are often found in mills and granaries; minute beetles too are commonly present. Various methods have been tried for destroying the insects attacking the cocoa, including fumigation with chemicals and spraying with insecticides. The most effective method, however, appears to be the application of heat, since this kills the eggs as well as the larvæ and adult insects, whilst, provided the temperature of 160° F. is not exceeded the cocoa is not detrimentally affected.

Industries of Chota Nagpur and Orissa.

The first volume of the *Journal of Indian Industries and Labour* is now complete with the issue of Part 4. It contains many articles of interest.

Mr. B. Abdy Collins, Director of Industries, Bihar and Orissa, contributes an interesting review of the industrial situation in Chota Nagpur and Orissa, touching on the natural resources of the tract, which "contains nearly all the coal and most of the iron ore hitherto located in India, besides other minerals, such as copper, chromite, mica, limestone, manganese, monazite, graphite, bauxite, china clay, and fire clay." The article includes a survey of the great metallurgical works already established, the schemes in hand for their development, and for the institution of new subsidiary industries. The author's views on the problems of the coal trade and railway transport will be of general interest, since the difficulties with which the industries of his province are faced in this respect are by no means confined to Bihar and Orissa. Mr. Kale's article on the economic aspect of the boycott of foreign cloth provides much food for reflection. A stalwart apostle of the *Swadeshi* principle, yet he calls attention to the danger of diverting labour from mills and factories to hand-spinning and hand-weaving. The argument for the other side is expounded by Mr. K. Sanjiva Rao, Textile Expert to the Government of Bihar and Orissa, whose note on hand-loom weaving in India deprecates both on economic and on social grounds the strangling of that industry by factory development, and propounds a scheme for its revival even in the teeth of the large scale power-loom mills.

Much has been said and written in the past about the lack of manual skill displayed by the average Indian craftsman, and the crying need for providing facilities for his technical training. Those interested in the subject will do well to read Mr. Cove's article "Technical Training," in which he cites a number of trades, which are characterized by bad workmanship, due to lack of training. His criticisms are pungent, and it is possible that some of his cases may be overstated, but few will challenge his conclusions; coming moreover from a practical man who for many years has been in intimate contact with the class of labour which is the subject of his article, his remarks should not go unheeded. Miss Broughton's article on the problem of industrial fatigue in India deserves the attention of all who are in any degree responsible for the efficiency of factory administration and the well-being of factory labour. Her account of the effect on output caused by a shortening of the working hours in a well-known English factory will no longer come as a surprise to those who have studied the physiological side of labour; but many will be interested to hear how by a study of the movements involved in certain work, by training the workers, improving appliances and exacting shorter hours of work with higher wages, an iron foundry increased its weekly output from 3,000 plugs (the estimated capacity of the plant) to 20,000 — while another firm with larger plant, found it difficult to maintain an output of 5,000 plugs. A striking commentary on the practical effect of good ventilation in factories is to be found in the graph which accompanies Miss Broughton's article.

To those interested in tanstuffs, particularly in the exploration of new tanning materials, Mr. Das's article "Mangrove swamps in the Sunderbans Forest Division, a valuable source of tanstuffs" will commend itself. The writer recapitulates the results of Mr. Pilgrim's investigation into the tanning qualities of

various mangroves of these tracts, and gives in tabular form an account of the behaviour of the tanstuffs when utilized experimentally at the Calcutta Tanning Research Institute.

"The Bengal (Smoke) Commission had been so successful that in less than three years it had diminished the dense smoke from (Calcutta) factory chimneys by over 80 per cent." This statement, made in the House of Lords in 1914, speaks for the efficiency of the measures taken to reduce the smoke nuisance in Calcutta. Mr. Robson has contributed an article to the *Journal* in which he outlines the way in which the Smoke Commission grappled with the smoke nuisance in Calcutta; his remarks on the reduction of fuel-costs due to improved types of furnaces will repay reading. The general public too are interested in that smoke reduction and control means a considerable saving in the laundry bill.

Mr. Barbour of the Titaghur Paper Mills has contributed an article on modern paper-making, which will be read with interest by persons interested in forest exploitation and by paper manufacturers generally. He refers to the vicissitudes of the industry in the past, the difficulties that beset it at present and the steps which he advocates to set it on a firm and permanent basis for the future.

The fourth part of the *Journal* contains also among other things a summary in tabular form of industrial disputes during the third quarter of the current year, summaries of "industrial intelligence" contributed by each province, miscellaneous notes (which include a note on briquetting experiments with Indian charcoal undertaken in the United States of America) and an abstract of the Bulletins of Indian Industries and Labour published during the year.

Labour-Saving Machinery in the Office.

The present day has been called an age of machinery, and in this article Mr. Irwin gives in *Industrial Canada* some illustrations of the truth of the description. Machinery is no longer confined to the factory, but has invaded the office, saving time and money, and promoting efficiency. The devices described here are a few examples of the way in which inventive ingenuity has solved office problems.

When Sholes invented the first practical typewriter in 1868, it was probable that the business men who made use of this device were considered extremely radical. No doubt there were plenty of "knockers" who shook their heads dolefully over this contraption. Yet to-day the typewriter is a commonplace. Its absence causes more remark than its use, and no office is without one. It has been followed by a multitude of mechanical devices, and each of these bids fair to become as indispensable. We have duplicators, talking machines, book-keeping machines, and many other instruments which serve to lighten labour, speed up operations and increase efficiency.

For quantity production of advertising matter, news bulletins or circulars, which are not needed in too great a quantity, there are several makes of stencil duplicators made. These machines, all operated more or less on the same basis, can be used by stenographers or office boys. To reproduce typewritten matter on these machines, it is necessary carefully to stencil the reading matter on a prepared silk or wax stencil. The operator must first remove the ribbon from her typewriter, see that the type is clean, and then write as

in an ordinary letter. This stencil is then placed on an inked drum and the impressions are obtained as this drum revolves and comes into contact with the paper. It is best to use a paper which has not too high a finish for this work.

THE MULTIGRAPH.

More expensive, but with a greater range, is the multigraph, a miniature printing outfit that is capable of turning out a great variety of work. With this machine it is possible to achieve almost any kind of printing work. Operated by a trained operator, as many as 7,000 copies per hour may be produced, in type ranging from 8 to 18 point.

A perfect imitation of typewritten matter is possible, and by use of a signature plate and special inking attachment, a facsimile signature appears at the foot of each letter or circular. One particular advantage is that by carefully matching the ribbon on the typewriter, the whole thing may appear to have been hand-typed.

This machine, operated usually by a small electric motor, appears somewhat the same as the duplicator. It has the same revolving drum, with the exception that, in this case, the type is set in grooves on the drum or segment. When printers' type is used, the ink is supplied by a system of rollers to the type face. With pica type a special ribbon is stretched over the type. Almost any kind of work may be done on this press, and many firms use it for printing their own stationery, envelopes, etc.

FOR PROTECTING CHEQUES.

The cheque-writer or protector has made great strides in recent years and is now in quite general use. Cheques written or counter-marked by this means cannot be raised or altered. About the size of a desk clock, it may be easily moved from desk to desk, and its operation is extremely simple. On the front is a dial containing enough figures so that any amount may be indicated. Moved by a thumbscrew an arrow points to the figure desired, the cheque is inserted and the roller inside which carries the type is depressed by a lever. The result is that the amount of the cheque is indelibly written upon the paper with coloured ink. The type is so constructed that it is impressed deeply into the paper, so that each letter is hollowed out and has the appearance of being embossed on the reverse side.

Coming into more common use is the telautograph, an instrument which, by the use of electrical energy, reproduces at any distance what is written at the transmitting point. In the transmitter, the motions of the pencil are communicated by levers to two rotary shafts. By these, variations in current are produced in two separate circuits. Electromagnetic devices and levers move a pen in the receiver as the pencil transmitter moves.

Possibly the banks are the greatest users of this instrument, with large stores who run "charge accounts" a close second. The bank teller can ask the standing of a customer's account without leaving his cage and without embarrassing the customer. In a large store, where customers are not known to all the clerks, the device is again useful. You may have been surprised some time at the apparently indiscriminate way the clerk hands out your parcel in return for your address. The answer quite often is the telautograph. While your parcel is being wrapped, the clerk writes your name on the telautograph, and the Credit Department consults its records, and merely writes O.K.

Visible record systems may almost be classed as machinery, too. They are made up in many forms

and consist of special cards hung on racks. These racks are so constructed that all the cards overlap, with one line showing the name and address visible at the bottom, and as cards may be inserted anywhere, it is possible to keep them in exact alphabetical order. Perhaps the handiest form is one which is reminiscent of the display stand used by vendors of picture post-cards. This stand, which revolves readily, may be placed close to the telephones in the Credit Department and from it information may be obtained in a moment.

INTER-OFFICE COMMUNICATIONS.

Office communications are taken care of now by inter-office telephones and dictagraphs. The internal telephone may be operated either by a central switch-board or it may be automatic, each telephone being a miniature switchboard in itself. In this, and in the dictagraph, the required person is obtained by the depression of a key or lever. The chief advantages of the internal telephone are its lower cost of operation, as the current may be stepped down from the lighting circuit; and the fact that it can be used without interfering with the service on the outside lines.

The dictagraph, an elaboration of the office telephone, has some decided advantages. First, there is not the necessity of holding a receiver to the ear. The instrument, a wooden box, rests on the desk, and is so tuned that any sound in one room is reproduced in the room with which the dictagraph is connected. It is not necessary to ring up the person wanted — you merely depress his key and start to talk. He can hear you anywhere in the room. If the general manager wishes to hold a conference, it is not necessary for all his lieutenants to go to him — he merely connects his instrument with each of them and the same result is achieved. It is said that this instrument is extremely popular with the office boys at lunch times, and that they are apt to damage its delicate mechanisms.

A few words should suffice for the dictating machine; it is so well known that much explanation is not necessary. Operated on the same principle as the talking machine, these machines, to the finished dictator, are a time saver. They permit him to do his dictation after office hours, or before breakfast if he wishes. The records are made of a wax composition, and may be shaved and used over several times. The outfit comprises: Dictating machine, reproducer, and shaving machine. These are operated by electricity, and may be started by either a thumb or foot switch. On the machine beside the cylinder are marked numbers and a slip with corresponding numbers is used with each record, on which any notes or corrections may be made. The reproducing machine has an attachment like a stethoscope, which the typist uses when transcribing the letters. She is able to run the machine as fast or as slow as she wishes.

Another piece of machinery is the cash register. This, generally considered a necessity to the store only, is now used in some large offices, particularly those doing a mail order business, and may be adapted to any business which receives a great deal of money by mail. For use in this connection, the mail is opened in the Cashier's Department and the amount of remittance enclosed is rung up on the register, stamped on the letter and retained. The correspondence then goes on in the regular way to a correspondent for acknowledgment and to the accountant for posting. At the end of each day the cash register strips are checked against the deposit slips and forwarded to the accountant. In his department the various adding, book-keeping and calculating machines are found. These machines can do almost anything with figures and are of various types.



Topics from Departmental Reports.



Agricultural Experiments in the United Provinces.

The following are extracts from the Resolution of the Local Government on the Administration Report of the Department of Agriculture, United Provinces, for the year ending 30th June, 1921:-

The Director's report contains a most interesting chapter on the research work conducted on cotton, sugarcane and wheat. He illustrates the importance of the recently created Indian Central Cotton Committee, whose duty it will be through the agency of his department, to keep the cultivators in touch with the demands of the market in India and foreign countries. At present considerable criticism has been directed against the efforts which the Department has made to introduce into the dry tracts of the Western Circle a variety of cotton known as "Aligarh White-Flowered" which is the product of the investigations carried out by the Deputy Director of Agriculture of the Western Circle. The representatives of the local spinning industry complain that this cotton is of little or no value to them and that the department has been misdirecting its efforts in encouraging the spread of this variety in the special tract for which it is suitable. On the other hand the cultivator finds that he can get a better financial return from this variety and continues to grow it. There is no difficulty in selling it and agencies exist which are willing to give a good price for it. The Cotton Committee should be able to advise as to the probable demand for the type of cotton represented by Aligarh White-Flowered and whether trade developments make it advisable to abandon all efforts to improve the yield of coarse short-stapled cotton.

As regards sugarcane, the most important event of the year has been the appointment of the Indian Sugar Committee whose report has recently been received after the close of the year. One of the most striking facts in that report is the extraordinarily small yield of sugar per acre of cane in India as compared with the yield in Java, Cuba and Hawaii, the other chief cane-growing countries of the world. The Committee have approved the lines on which research work on sugarcane is being conducted in this province and have made a large number of suggestions which will be considered as soon as possible by the Government. The experiments which have been made by the officiating Director at Shahjahanpur show that there is no reason why the yield of cane in this province should not be at least doubled. The Director quotes a remarkable estimate that, if the entire cane crop of India were crushed in modern mills and worked in central factories, an increased production of over one million tons of sugar would result.

The use of improved varieties of wheat, especially Pusa No. 12 and 4, continues to spread rapidly among the cultivators, and it is now estimated that some four hundred thousand acres are sown with these

varieties, which at a modest estimate give the cultivator an increased return of Rs. 15 per acre. Expressed in money, this represents an extra gain of about 60 lakhs of rupees annually to the cultivators. The department is steadily increasing the number of seed depots where the cultivator can purchase the best varieties, and the Government have cordially accepted a resolution moved in the Council that the eventual aim should be to establish a seed depot in every tahsil. The Government hope that landowners will assist by establishing seed depots and have asked the Board of Revenue to set an example in the larger estates under the management of the Court of Wards.

Considerable criticism was directed by the members of the Legislative Council against some of the farms managed by the Agricultural department. The Government fully agree that a demonstration farm should easily pay its own way and that if it fails to do so the neighbouring cultivators cannot be expected to imitate its methods. Such farms will be closed, but the case of experimental and research farms is different, as their aim is to experiment with new varieties and new methods and experiments are bound to involve a certain number of failures. It is probable that, where demonstration farms have failed to pay their way, the real reason is lack of supervision, due to the fact that the Deputy Directors have unwieldy circles, but the fact remains that it is not worth while to keep demonstration farms which fail to fulfil their purpose. The department is gradually strengthening the staff available for demonstrating on the cultivator's own land new methods and superior varieties evolved at the experimental farms. In this they are being helped by many landlords who have established demonstration farms on their own land. Practically all these farms, besides assisting the department, are bringing in a considerable income to their owners.

One of the most important branches of the department is that of agricultural engineering. The progress made with the construction of tube-wells during the year under report was most disappointing, mainly owing to the fact that engineering material has risen enormously in price and is very difficult to obtain. The success of tube-wells in this province has been established and the demand for such wells is at present altogether beyond the powers of the Agricultural department. A large grant for equipment and for the building of a workshop was passed by the Council in the current budget, and the Government hope that before long the Agricultural Engineer will be in a better position to satisfy this demand. Apart from tube-wells, there are many other methods in which the engineer can assist the cultivator and relieve his cattle. The Indian Sugar Committee in their report have laid great stress on the importance of developing the Agricultural Engineer's branch, and have pointed out that if the cattle are relieved from tasks, such as cane-crushing which they perform with small efficiency and with much loss of stamina, they will

have greater strength and energy for deep ploughing. Mr. Parr, Deputy Director of the Western Circle, has carried out a most interesting series of experiments on the use of baisurai (*Pluchea Lanceolata*), a well-known weed which covers over a million acres in this province. He has found by experiments at the Agra and Aligarh farms that this weed can replace half the total fodder required by working bullocks, and that a ration of one-half green baisurai and one-half juar stalks gives better results than a full ration of juar stalks. The Director points out that, if full use were made of this discovery in the districts of Aligarh, Muttra, Etah and Agra where the weed is most prevalent, some six million maunds of other fodder could annually be saved. The Government hope that the Council will vote a grant to enable this use of baisurai to be widely demonstrated and tested, so that the cultivator may become familiar with it and be willing to use this substitute freely when the next fodder famine occurs.

Cattle Farms in U.P.

The following Press Communiqué has been issued by the U. P. Government :—

Government have recently been considering whether any changes are desirable in the arrangements at present in force for the control of cattle farms and the direction of cattle-breeding in this province. The two Government cattle farms in the Muttra and Kheri districts respectively have up till now been under the control of the Civil Veterinary department, which has also been in charge of district cattle-breeding operations, although it has for some time past been intended by Government that the latter should in the near future be taken over by the Agricultural department.

2. The whole question came before the Board of Agriculture at their meeting of 12th August, 1921. The Board resolved that the control of both the cattle farms should be transferred to the Agricultural department, or be placed under the Special Deputy Director of Agriculture in charge of cattle-breeding. They are at the same time recommended that an Advisory Committee should be associated with the Special Deputy Director of Agriculture in his management of each of the farms.

3. Government have accepted these recommendations of the Board of Agriculture. It is anomalous that the Special Deputy Director should not be entrusted with the control of these cattle farms, if he is to discharge the work for which he was appointed; moreover, the change will set the Civil Veterinary department free for its legitimate work of curing and preventing animal disease. The transfer of the charge of the farms has accordingly been made with immediate effect.

An Advisory Committee has also been constituted to advise the special Deputy Director both in the management of the farms and in the general direction of cattle-breeding work throughout the province. The Board of Agriculture contemplated the appointment of two local Committees, but to Government it appears that a Provincial Committee will be more useful and efficient, if the Deputy Director of Agriculture is to receive satisfactory advice as to the general development of cattle-breeding work. There will be nothing to prevent the Committee from appointing local Sub-Committees, if it thinks fit.

4. The composition of the Provincial Committee will be as follows :—

The Director of Agriculture, Chairman.

The Veterinary Advisor to Government.

One member elected by the British Indian Association.

One member elected by the Agra Zamindars' Association.

One member elected by the United Provinces Zamindars' Association, Muzaffarnagar.

Two members elected by the Legislative Council.

One member nominated by Government from districts of the Western Circle.

Do do of the Central Circle.

Do do of the Eastern Circle.

The Special Deputy Director of Agriculture, Secretary.

5. With regard to the control of district cattle-breeding operations, Government propose to transfer this work also to the Special Deputy Director of Agriculture; but, as it is necessary to make financial provision for the subordinate staff which he will require for the purpose, this transfer will not take immediate effect. It is hoped to effect this transfer from the beginning of next financial year.

Educational Scholarships in Mysore.

The following Mysore Government Order has been issued :—

The question of systematizing the various schemes of scholarships in the State has been under the consideration of Government for some time past. The expenditure on scholarships has been steadily increasing since 1890-91 and has risen from Rs. 21,404 in 1890-91 to Rs. 3,65,398 in 1921-22. Scholarships paid from State Funds may broadly be classified into

(i) those tenable in and outside the State but within British India; and

(ii) those tenable in foreign countries.

The revision of the scheme of Foreign scholarships formed the subject of a separate order issued in May 1920. The former may again be subdivided into:

(a) those meant for general education comprising the Primary, Secondary and University grades, and

(b) those available for technical courses of study in local institutions or for professional courses in institutions in British India.

2. In the early stages, scholarships were provided in the lower grades of education only to women, pupils of the depressed classes and special communities, such as the Mahomedans and the Pallegars. In the higher grades, provision was made only in the Arts Colleges for five merit scholarships and a few stipends ranging in value from Rs. 1-8-0 to Rs. 5 per mensem. In 1914 one hundred scholarships of Rs. 5 each were instituted from Village School Funds to enable intelligent pupils in taluk stations to continue in the IV and V Vernacular standards. So far as technical and professional education was concerned a few stipends were awarded in the local institutions and also in technical and professional colleges in British India for the study of subjects for which no provision existed locally. On the introduction of the Honours Course in the Madras University, Government sanctioned a few scholarships to enable deserving young men to prosecute higher studies in the Colleges outside the State and in 1913 two scholarships were sanctioned for pupils studying Logic in the B. A. Course in Colleges in British India.

With the reorganization of Industrial, Technical and Women's Education and of the Normal institutions in 1913 and 1914, liberal stipends on a large scale were sanctioned for pupils in the technical and industrial schools and the scholarships provided for girls were also increased. The allotment for women's scholarships has since been augmented by the provision of scholarships tenable in Primary and Lower Secondary classes and in the District Headquarter Girls' Schools sanctioned in 1915 and 1918 respectively. To induce private candidates to undergo the Upper Secondary and the training course and thus meet the requirements of the Department, Government sanctioned a liberal scale of stipends in 1918.

With a view to promote education among the educationally backward communities an annual allotment of a lakh of rupees has been made since 1917 for awarding scholarships in all grades of education to members of these communities and of this allotment a sum of Rs. 15,000 was reserved for the depressed classes in the vernacular primary and lower secondary stages and in industrial classes. A further allotment of Rs. 15,000 has also been sanctioned for pupils of the depressed classes for studying English.

3. The Education Committee of the Economic Conference submitted in May 1917 a scheme for the revision of scholarships, the main features of which were that

(i) a total allotment of Rs. 3 lakhs should be provided inclusive of the allotment of Rs. one lakh for scholarships to the backward classes ;

(ii) the scholarships should be classified under two heads, *viz.*, (1) open, *i.e.*, available to all classes on consideration of merit only and (2) close, *i.e.*, reserved for special communal groups on ground of poverty and merit.

Government considered that the best method of encouraging middle-school education was not by increasing the number of scholarships but by making middle school education free. As regards higher grades they directed that merit scholarships for all classes and special scholarships on a community basis for combined merit and poverty might be introduced, and accordingly referred the scheme of scholarships to the Inspector-General of Education for further revision on these lines. The Inspector-General of Education consulted the Board of Education and the scheme sent up by him was referred to the University for opinion regarding the scholarships proposed for University courses. The revised proposals submitted by the Inspector-General of Education, the Board of Education, and the University were considered by Government and with a view to co-ordinate the several schemes of scholarships and to reduce the expenditure on scholarships in view of financial stringency, a Committee composed of the Inspector-General of Education and representatives of the University, the backward communities, and Women's education was constituted to examine in detail the various schemes of scholarships tenable within and outside the State except Foreign Scholarships and submit detailed proposals.

4. The recommendations of the Committee as regards the general principles for the grant of scholarships are as follows :—

(1) That all scholarships in the Primary and Kanada Lower Secondary grades be abolished except those meant for Depressed Classes which should be administered as a special fund and under special rules.

(2) "That girls' scholarships be made tenable to girls studying in boys' schools also, *i.e.*, that scholarships should not be attached to particular institutions but to grades of Education."

(3) "That the term" widows' scholarships "be omitted and that the funds now given in this behalf be merged in the general scheme of stipends for girls' education to which widows too would be eligible."

(4) "That a separate scale of stipends be instituted for Depressed Class girls."

(5) "That the full freeships now given to the Depressed Classes and half freeships to Mahomedans and Pallegars be continued."

(6) "That the allotment to the Maharani's High School be cut down by a third and the balance merged in the general fund for girls' stipends."

(7) "That the backward classes scholarships fund be not reduced."

(8) "That the practice of freeships being attached to scholarships be continued."

(9) "That the number of freeships be reduced in the Entrance Classes from thirty-three and one-third to fifteen per cent and in the High School classes from 20 to 10 per cent, it being presumed that similar reductions will be effected in the University."

(10) That the Aligarh Scholarships be reduced from 7 to 5.

(11) That the Inspector-General of Education be given a reserve fund of Rs. 2,400 to meet cases of exceptional hardship, this fund being available to the University also.

The Committee have also suggested reduction in the number and value of scholarships now in force and recommended the abolition of the District stipends in the University and the Ayurvedic and the Unani scholarships.

5. Government approve of the recommendations of the Committee set forth above with the following modifications :—

(1) The subject stipends will be continued but the allotment for the purpose will be reduced to Rs. 2,400.

(2) The special district stipends will be restricted to pupils of Shimoga, Kadur and Chitaldrug Districts.

(3) The present scale of freeships will be continued according to existing sanctions but the whole question of freeships will be re-examined and final orders passed in due course after consulting the University.

(4) The merit scholarships in the College of Engineering will be reduced to 8 of Rs. 15 each and the ordinary scholarships tenable in the same institution to 12 of Rs. 10 each per mensem.

(5) Scholarships tenable in the Mysore Tannery and the Mysore Pharmaceuticals will be discontinued and one Agricultural Scholarship of Rs. 40 per mensem for a Degree in Agriculture tenable for 3 years will be awarded instead of 2 of Rs. 35 each.

(6) Scholarships for private pupils in the Upper Secondary Training and Lower Secondary Training classes in the Maharani's College and the Zenana Normal School respectively may not be deleted as proposed but 6 Upper Secondary Training Scholarships of Rs. 12 and 6 Lower Secondary Training Scholarships of Rs. 10 may be retained.

(7) The scheme of scholarships for girls in all grades will be further examined and separate orders passed in due course, the existing scheme being continued for the current year.

The scheme as now sanctioned effects a saving of Rs. 81,864 per annum in the expenditure on scholarships.

Constitution of Village Forests.

The following Order No. I. C. 3118-27—Ft. 38-19-10, dated 29th November 1921, has been issued by the Mysore Government:—

The statement received from the Revenue Commissioner shows that, of the 99 blocks constituted up to end of June 1921, the Special Range Officer in charge of the Village Forest Scheme had inspected 77 blocks and found that only 9 Panchayets were able to collect fees and that 63 had just begun their work.

The Revenue Commissioner considers that the progress is slow owing to the rigidity of the rules. He recommends (i) that, as it is difficult to get an area of 200 acres in one plot in a single village, the minimum area for a village forest may be reduced from 200 to 50 acres, (ii) that the Panchayats may be empowered to dispose of all the produce including reserved timber and tangadi except sandalwood in the area comprised in the village forest block, and (iii) that the question of the grant of powers to all Panchayets, similar to those conferred on the Harlakunte Panchayet referred to above, may be considered after the details of the working of that forest are known.

2. The Conservator of Forests is agreeable to the Revenue Commissioner's proposal to empower the Panchayets to dispose of all forest produce, except tangadi and sandalwood, subject to the condition that the seigniorage rates for timber shall not be less than those prescribed in the adjoining State Forests, barring auction sales when it will be sold to the best advantage of the Panchayet. He is, however, not in favour of reducing the extent of the village forest blocks as even the extent now fixed as a minimum will not pay its way, if conserved and worked on approved lines.

3. Government are pleased to accept the recommendations of the Revenue Commissioner in regard to the reduction of the minimum extent of a village forest to 50 acres. They are also pleased to empower the Panchayets to dispose of reserved timber in such forests subject to the restrictions proposed by the Conservator in regard to the rates of seigniorage. Sandalwood and tangadi (including kakke) growing in the village forest area shall, however, not be disposed of by the Panchayet.

4. The following rule will accordingly be substituted for Rule 15 of the Village Forest Rules issued with the order first read above.

"Rule 15.—The Panchayet shall have power to dispose of all trees, grass and other forest produce with the exception of tangadi (and kakke) and sandalwood, subject to the condition that the seigniorage rates on timber (except when it is sold in auction) shall in no case be less than those prescribed for the same in the adjoining State Forests."

Turkish importers who were previously interested in Batum petroleum are now purchasing in Rumania, which is sending substantial consignments to Constantinople.

Among some of the measures proposed to alleviate the financial crisis in Cuba are the creation of a State bank, new banking laws, and the issue of paper money.

During the first nine months of the 1920-21 fiscal year tobacco sales under the Italian Government monopoly exceeded those of the previous year by 687,191,441 lire.

Cotton Contracts Act.

The following Press Note has been issued by the Government of Bombay:—

The following memorial has been received by the Government of Bombay from representatives of the Cotton Trade of Bombay including the East India Association, the Cotton Clearing House, and the Millowners' Association:—

"We, the undersigned representatives of the Cotton Trade in Bombay, request that Government may be pleased to move His Excellency the Governor-General to withhold his consent to the Repeal Act and to continue the operations of the Cotton Contracts Board until such time as Government are satisfied that the Trade has succeeded in setting up adequate machinery for the control of their own operations."

The Governor in Council, after consultation with all sections of the Trade, is satisfied that the great majority of the Cotton Traders of Bombay desire that the Cotton Contracts Control Act of 1919 should remain in force until all contracts of the May period have been liquidated. He has therefore addressed the Government of India requesting that the Repeal Act may be returned to the Government of Bombay for reconsideration and submission to the Legislative Council at the earliest possible moment. For the present therefore the Cotton Contracts Board, as constituted under Act I of 1919, will continue to function. Proposals will be submitted to the next meeting of the Legislative Council for releasing the control over contracts entered into for period subsequent to May.

Topics in the Journals.

Journal of the Ministry of Agriculture, December 1921.—The work of the Rothamstead Experimental Station, by E. J. Russel, D.Sc., F.R.S.

The Industry, November 1921.—Study of London and its value to Bombay, by B. C. Vaidya, M.A.

Social Service Quarterly, October 1921.—Local Option and Anti-Drink Propaganda, by N. G. Joshi, B.A., LL.B.

Modern Review, December 1921.—The Modern Age, by Rabindranath Tagore.

Young Men of India, December 1921.—India in Reconstruction, by H. Calvert and K. L. Rallia Ram.

The Local Self-Government Gazette, November 1921.—Primary Education in Bengal, by Rev. D. G. M. Leith.

Calcutta Review, Vol. I, Supplement 3.—Higher Teaching in Calcutta University, by N. Chatterjéa.

Agricultural Journal of India, November 1921.—Possibilities of Mushroom Industry, by S. R. Bose, M.A., P.L.S.

The German aniline trust has acquired the "Elektroche mische Werke" at Berlin-Bitterfeld-Rheinfelden, which were partly owned by the Elektro Bank at Zurich and the Berliner Elektrizitätswerke A.-G. The works represent a value of more than 100,000,000 marks.

With a view to the development of trade between Sweden and Colombia, and in particular to the sale of Swedish matches, steel, constructional material, electric motors, agricultural implements, refrigerating machinery, etc., it is proposed to establish at Barranquilla a permanent exhibition and commercial exchange.



Statistics.

INDIAN AND FOREIGN.



Estimates of Principal Crops in India, 1920-21.

Preliminary Statement showing the Estimated Total Yield, the Acreage, and the Yield per acre of Principal Crops in India for the season 1920-21, as compared with those for the preceding season 1919-20, together with the Average Yield per acre of the preceding Ten years, 1910-11 to 1919-20 :—

Crops	Estimated total yield		Acreage		Average estimated yield per acre		Average yield per acre of the ten years 1910-11 to 1919-20.
	1920-21	1919-20	1920-21	1919-20	1920-21	1919-20	
	Tons	Tons	Acres	Acres	lbs.	lbs.	lbs.
Rice ..	28,033,000	31,970,000	78,023,000	79,426,000	805	902	904
Wheat ..	6,709,000	10,122,000	25,722,000	29,949,000	584	757	695
Sugarcane ..	2,465,000	3,036,000	2,553,000	2,686,000	2,163	2,532	2,346
Linseed ..	269,000	419,000	2234,000	3,103,000	270	302	301
Rape and Mustard ..	848,000	1,153,000	4,912,000	5,893,000	387	438	409
Sessamum ..	388,000	449,000	4,291,000	4,254,000	192	236	208
Groundnut ..	931,000	822,000	1,951,000	1,586,000	1,069	1,161	1,086
Indigo ..	Cwts. 40,000	Cwts. 38,000	238,000	233,000	19	18	18
Cotton ..	Bales of 400 lbs. 3,556,000	Bales of 400 lbs. 5,796,000	21,016,000	23,333,000	68	99	78
Jute ..	5,898,000	8,482,000	2,502,000	2,893,000	943	1,195	1,200
Tea ..	lbs. 345,340,000	lbs. 377,056,000	701,000	692,000	493	545	528

Note.—The season was not favourable owing to deficient rainfall; and, as a consequence, the outturn of all the important crops showed a marked decline as compared with that of the preceding season. The total production of rice in 1920-21, 28,033,000 tons, was 12 per cent less than in 1919-20, the yield per acre being 97 lbs. and 99 lbs. below the previous year and the last decennial average. The production of wheat (6,709,000 tons) was 34 per cent less than in 1919-20, the outturn per acre showing a decrease of 173 lbs. and 111 lbs., respectively, as compared with the previous year and the average of the preceding 10 years. Sugarcane yielded 369 lbs. and 183 lbs. less per acre than in the previous year and the last decennial average. Linseed and rape and mustard yielded per acre 32 lbs. and 51 lbs., respectively, less than in 1919-20. The yield per acre of sessamum was 44 lbs. less than in the preceding year. The production of groundnut (931,000 tons) was 13 per cent larger than in 1919-20, but the yield per acre declined by 92 lbs. The total yield of indigo, 40,000 cwts., was more than that of 1919-20 by 7 per cent, the yield per acre exceeding that of the previous year by 1 lb. The total production of cotton, 3,556,000 bales, was 39 per cent smaller than in 1919-20, the yield per acre having dropped to 68 lbs. from 99 lbs. and 78 lbs. in 1919-20 and the average of the preceding ten years. The production of jute (5,898,000 bales) was 30 per cent below that of the previous year, the yield per acre being less by 252 lbs. The production of tea was 8 per cent less than in 1919, the outturn per acre being 52 lbs. and 35 lbs. respectively, below the previous year and the last decennial average.



Book of the Month.

THE INDIAN OPIUM TRADE.*



The Oxford University Press has just issued a carefully compiled statement by Prof. L. F. Rushbrook Williams, Director of the Central Bureau of Information, on the Indian Opium Trade. We take the following passages from it :—

THE INTERNAL TRADE.

Until sometime after the British had been established in India there was no restriction upon the consumption of opium. It must be remembered that the drug is not generally used for smoking in India, but is eaten as a kind of a family medicine, either in the form of pills, or as a watery decoction. This habit is common in every part of India, both rural and urban, and the medicinal and non-medicinal uses of opium are not distinguished in popular opinion. The Royal Commission of 1893 concluded that the use of opium among the people of India was as a rule moderate, and that excess was both exceptional and condemned by public opinion. So eminent an authority as Sir William Roberts, M.D., F.R.S., stated that the larger part of the opium consumed in India was used for the mitigation of suffering and for the prevention and cure of disease. The best proof that the general use of opium in India is moderate is to be found in the fact that, while consumption of the drug is both general and widely distributed, the mean annual amount consumed per head is less than 1-16th of an ounce.

Such opium smoking as actually takes place is of comparatively recent growth and is indulged in for the most part by low and openly dissipated classes. Before the Hague Opium Convention was drafted, Government had closed six hundred shops which formerly existed for the sale of smoking preparations. Both the sale and manufacture of opium in a form suitable for smoking is now absolutely prohibited; and the use of opium for smoking purposes is made almost impossible by a rigid limitation of the quantity which a person may at one time possess. This quantity varies from 192 grains in Southern India to 768 grains in Sindh, the limit in most places being either 384 grains or 576 grains. By way of supplementing the effects of this restriction, Government is now preparing a Bill to prohibit public gatherings for opium smoking.

It is impossible to appreciate the position of Government relative to the opium habit without considering the particular circumstances of India. The Royal Commission of 1893 found the great mass of Indian opinion entirely opposed to the prohibition of opium, as constituting an unnecessary restriction on individual liberty and an interference with established habits and customs. It must be remembered that the soil of most parts of India will produce the opium poppy. The population of India has accustomed itself to the consumption of opium through

several centuries, and connects it with certain medical properties. The use of opium on ceremonial occasions is also sanctioned by long standing habit. As the Royal Commission stated "Upon every consideration of prudence and statesmanship it seems clear that in the position of the British Government in India, we cannot deal experimentally with 290 millions of people in a matter involving interference with the innermost concerns of personal life, without a clear pronouncement of India's opinion in favour of such a step."

The policy of the Government of India towards opium has from the earliest times been consistent. The early British Administrators finding that they could not stop the consumption, decided to place it under regulation, at the same time distinctly declaring that "in taking this step they were desirous of countenancing only to the narrowest extent possible a habit which they found themselves unable to eradicate." Since 1813, when the first regulation on the subject was passed, the Government of India has remained steadfast to this policy. The method which is being employed to bring about the gradual and effective suppression of the manufacture and consumption of opium is to fence the trade round with every practical restriction, and slowly to increase the price to the consumers. We have already noticed the restriction which exists upon the possession of opium in any form by individuals. Only specially licensed persons may sell opium, the Government reserving to itself a wide discretion in its choice of licenses. The process of restriction must however be gradual in order that the end in view should not be defeated. For, as may well be imagined, in raising the rate of duty, in limiting the number of shops and in imposing conditions on the grants of licenses opium tends to become so expensive and so difficult to obtain that an incessant vigilance must be exercised to prevent development of a regular trade in smuggled and illicitly produced opium. The success of this policy may be observed from studying the figures of consumption and Revenue for the last 10 years available. In 1909-10 the consumption was 993,400 lbs., and the revenue £937,300. The consumption was increasing from 1909-10 till 1913-14, when it reached 1,011,300 lbs., and in that year the revenue was £1,347,000. In subsequent years the consumption declined, and in 1918-19 was only 936,400 lbs., but the revenue was still further increased to £1,644,800.

THE EXPORT TRADE.

It should be remembered that India is only one of many opium-producing countries. Asia minor, Persia, Afghanistan, China and lately Japan are all at present comparatively large opium-growing areas. To take only the first and the last, it may be noticed that immense quantities of Turkish opium have been imported into countries so far a field as America during recent years, the largest purchasers in the Turkish markets in the early part of the year 1919 being Americans. In the latter part of that year American purchasers were exporting Turkish

*Oxford University Press, London and Bombay.
Price Re. 1—8—0.

opium to Japan, which country none the less has increased its production of opium from 3,615 lbs. in 1910 to 151,948 lbs. in 1919. Figures placed before the Advisory Opium Committee of the League of Nations show that China now produces some 580,000 chests, or 90 per cent of the world's production, and so is quite independent of exports of opium from other countries. Turkey, India and Persia are now exporting approximately equal quantities, some 10,000 chests per annum. Thus the share of India in the total Opium trade is quite small.

So far as India is concerned, the export trade is of very long standing. At the beginning of the 16th century both Indian and Arabian merchants were trading in opium with Chinese and the other Eastern markets. Soon after this the European traders got a footing in the business. With the growth of British power in India and the gradual restriction of free opium traffic by the action of Government, the system of auctioning opium for export in Calcutta was introduced. The number of chests of Bengal opium sold annually at Calcutta during the period 1798—1821 remained practically constant at about 4,000 a year. Some time about 1830 the cessation of the European wars led to a great revival of the opium trade in the eastern seas and the competition of Persian and Turkish opium could no longer be neglected. Accordingly, the Government of India decided to revise its arrangements. As has already been noticed, it was found impossible to restrict the unregulated Malwa trade by direct purchase, and Government thereupon extended cultivation in Bengal and brought a larger supply of its own opium into the market. Between 1830 and 1848 the average sale at Calcutta had increased to about 19,000 chests, thereafter growing to nearly 50,000 chests in the middle "fifties." Except for depression during the years 1859—62 the quantity remained over 40,000 chests until 1910—13, after which it rapidly declined.

Up to the year 1797-98 the annual gross proceeds of the auction sales averaged about £110,000. In the first half of the 19th century the average was about £0·9 millions, but in response to the policy of restricting production and increasing price, the revenue expanded considerably from that time, standing between 1880 and 1909-10 at somewhere about £4 millions. The quantity of Government opium sold has successively diminished while the average price realized per chest has continually increased.

In addition to the export of Government opium there must be reckoned the export of opium from Malwa. Between 1843 (the date when the annexation of Sindh made the regulation of the Malwa export trade to some extent feasible) and 1875-76, the average number of chests of Malwa opium exported from Bombay had risen from 16,000 to 40,000. Subsequent years witnessed a steady decline. The first year of the 20th century showed an export figure of only 26,000, while for the quinquennium 1901—05 the average annual exports were 19,000 chests. As we shall now proceed to notice, the decline of the China trade has put a stop entirely to the export traffic in opium from Malwa.

China was for many centuries the principal market for Indian opium. Counting the Malwa opium, which almost entirely went to China, the number of chests exported from India to that country between 1853 and 1892 never fell below 60,000 annually. During the years 1892 to 1907 the yearly quantity exported to China averaged about 50,000 chests to the value of something over £4 millions. The export of opium

to China had been regulated by an additional article in the Chefoo Convention of 1885, according to which all Indian opium was required to pay a fixed fee before it was allowed to break bond in China. In 1906 however the Chinese Government issued an order for the complete eradication of the cultivation and consumption of opium within ten years. Negotiations were opened with the British Government, in accordance with which the Government of India arranged to diminish the total amount of both Malwa and Government opium offered for export by 1-10th of the average yearly quantity imported into China during the period 1901—05. In addition to this regular annual diminution of more than 5,000 chests of certified opium, the Government of India agreed to reduce the number of chests for sale to China during the years 1912—14 by a further quantity, to compensate the Chinese Government for the import of uncertified chests held in Hong Kong and the treaty ports at the time when the treaty was concluded. Only opium certified by the Government of India was to be allowed to pass the Chinese customs. Further, the Government of India promised to close completely the whole Indo-Chinese opium trade before the year 1917, if proof were forthcoming that China were able to carry into effect her good intentions. It was also agreed that China might prohibit at any time the import of Indian opium into any province as soon as native cultivation had ceased. Since only eight out of 22 provinces of China ordinarily engaged in the Indian trade, and since these provinces produced only 6 per cent of Chinese home-grown opium, this last concession was an important one. But the agreement was found to be working badly, for the Central Chinese Government had not the ability to force its policy upon the provinces. When the Chinese revolution broke out, the trade in Indian opium was reduced to a state of chaos, and the auction of opium certified for export to China was finally stopped by the Government of India in 1913. This was a particularly heavy blow to the Indian states of Malwa, whose export trade was almost exclusively confined to the Chinese market. Bitter complaints were received from the State authorities at the cessation of a commercial arrangement in which they were so vitally interested.

In addition to China, other countries have also from time to time taken their share in the opium trade of India. The Straits Settlements have always been a large importer of Indian opium, the average in the first years of the 20th century being about 12,000 chests per year. Between 1905-06 and 1919-20 the number of chests exported from India to the Straits Settlements has fallen from over 12,000 to just over 4,000. India does not represent the only opium supply of the Settlement; for example in the year 1919-20 nearly 1,200 chests of Persian opium were also imported. Another of India's opium customers is the Dutch East Indies, which since 1917 has dealt direct with the Government of India. In the year 1919-20, 1,800 chests were exported from India to Batavia. Siam also buys direct from the Government of India and imported, during the year 1919-20, 1,400 chests of opium. During that year, French Indo-China, Japan and the United Kingdom took about 1,000 chests each, and Hong Kong nearly 800. British North Borneo took 250, Ceylon 60 and Mauritius 35.

In 1907, when the agreement with China was entered into, 16,000 chests were estimated to represent the requirements of the extra China market. In 1911, this limit was cut down to 14,000 chests and in

1912 to 13,200. This ration was calculated on figures supplied by the Board of Trade, being based on the estimates of the imports of the various countries which at that time took opium.

The policy which the Government of India has adopted in attempting to regulate the export trade is to endeavour to supply opium direct to the countries which consume it instead of auctioning the opium to private buyers. It is important to note, however, that there is no obligation on any contracting government to take any minimum quantity of opium, although that government is expected to take substantially its whole requirements from the Government of India. The statement below gives the number of chests so far supplied in this way together with the probable estimates for the year 1921 :—

	1917	1918	1919	1920	1921
Straits Settlements (including the Malay States) ..	3750	4000	4000	3000	3000
Hong Kong ..	420	360	540	180	120
Siam ..	1600	1700	1700	1700	1700
British North Borneo ..	100	120	120	192	240
Dutch East Indies ..	2200	2200	2200	2900	2300
Ceylon ..	..	..	..	10	70

At the present moment, purchasers at public auctions in India may send opium to countries even which the Indian Government has agreed to supply direct, but there is of course not the slightest obligation on these countries to receive it, or indeed to take any opium at all. Without the permission of the Governments concerned, no opium, whether purchased by auction or supplied by the Government of India, can enter other countries. A decrease is continually being made in the quantity offered at public auctions. In 1915 this was just 10,000 chests and by 1918 it had been reduced to 5,600. For 1920 the maximum quantity advertised for auction was fixed at 4,000 but during the year only 2,320 chests were sold. As has already been mentioned the necessity for the public auction of opium will probably disappear with the conclusion of direct contracts with the large opium importers which hitherto rely upon private firms. These are at present Japan, Portugal and France.

The main fact of the Indian opium trade during recent years is that India, including the Indian States, has now ceased to send about 50,000 chests annually to China and has foregone something in the neighbourhood of £4 millions. On the other hand, China herself according to the figures laid before the Advisory Opium Committee of the League of Nations in May 1921, is producing about 580,000 chests herself at the present time.

The loss of the China trade and of the £4 millions of revenue which it brought with it, has meant much to a country so poor as India. There would be some consolation in the loss if we could believe that the opium consumption of the world had decreased by this amount. But the price of the drug in China has fallen by three-fourths of late, and it seems plain that Indian opium has only made way for supplies locally grown, amounting according to the latest statistics, to the astonishing total of 580,000 chests. The revenue voluntarily relinquished by India has been merely transferred elsewhere.

In addition, while India used to export 16,000 chests a year to the extra-China market she now exports less than 11,000 chests. The striking dimi-

nution of the trade has been to some extent disguised by high prices. Whereas at one time as many as 1,00,000 chests of opium left the shores of India in one year, and while in the early years of the present century the average annual export was about 70,000 chests, during the two years 1918-19 and 1919-20 the exports were under 14,000 and 12,000 respectively. In future the exports are likely to be under 11,000 chests.

The policy of the Government of India in the matter of exporting opium has been much misunderstood. If any country decides to purge itself of the use of this drug and prohibits entirely the import of opium the Government of India refuses to allow opium for that destination to leave its shores. For example, a consignment of opium for China would not be allowed to leave Calcutta. Further, the Indian Government prefers to consign opium only to the government of a country or to consignees approved by a Government and 77 per cent of the total opium export of India is now disposed of in this way. But the import laws and the power to make them effective are the weapons of the importing country rather than of the Government of India. The Indian Government is not prepared to restrict export to a nation which at the same time is allowing import from other countries. To do so would merely reduce Indian revenues without any concurrent advantage in the reduction of opium consumption. The Indian Government has for many years conducted the opium trade on open and honest lines, producing an unadulterated drug for which people are prepared to pay more than for the Turkish or Persian product. While Government subjects the trade to severe restriction and to constant, if gradual, diminution, it believes that so long as any part of the world requires opium, Indian opium, containing as it does less morphine, will meet the demand in a less harmful form than other varieties. In a word the Indian Government does not feel that it is furthering the world's moral progress by withdrawing from the market in favour of other nations which do not exercise the same strict control over a traffic so dangerous.

Owing to waning demand from the United Kingdom, the banana industry of the Canary islands is in a precarious condition.

American tank steamers outward bound with petroleum are returning, after cleaning tanks, with cargoes of coconut oil.

Rouen will be the scene of the sixth congress of the French Association of internal Navigation, to be held from July 4 to 8.

Output of Ruhr collieries amounted to 8,072,912 tons in January.

The Productive power of Brazil and its return to prosperity is being assisted by the imagination of good-class Italian settlers.

During 1920 there was an increase of about 3,500,000 acres in the land under cultivation in Germany compared with 1919.

Machine tools are at present required by the Bulgarian State Railways, coal mines, and military and naval arsenals.



Books in Brief.

SHORT REVIEWS OF RECENT BOOKS.



Co-operative Credit for the United States.

By H. W. Wolff.—Published by Messrs. Sturgis and Walton Co., New York. Copies to be had from the Manager, Mysore Economic Journal Office, Bangalore City P.O.

We owe it to the Macmillan Co. of New York to acknowledge their courtesy in sending us for review the above publication. Any publication by Mr. Wolff ought to prove interesting to a co-operator. To him, co-operation is the "approved European recipe" as he styles it, "for want of working capital." The object of the book is to show how to apply the co-operative principle to American conditions. That co-operation is a creator of widely diffused wealth is now acknowledged on all hands in most countries and there is no reason why it should not prove so in the United States, if its working on sound lines is assured. Mr. Wolff's presentation of the subject—in the "objective manner as he calls it—leaves little to be desired". The book is specially intended for American readers but that is no reason why co-operators in this country should not study it. It is necessary to add that it contains much of value to co-operators in India. In the chapter on "Control and Audit" is the following observation:—"The worst method of all is that of entrusting inspection to the Government, by means of Inspectors to be appointed by it." He quotes M. Luzzath's famous words that Government inspection is "worse than no inspection at all." He then adds: "The Government Inspector might truthfully report everything to be according to rule—so far as his instructions go—in a Credit Society which was nevertheless on the brink of insolvency." Mr. Wolff favours, as is well known, the German system of trained Inspectors and quotes the Indian idea of Central Banks having their own Inspectors. The book, it is needless to add, is a thoroughly readable one and ought to find a place in every co-operative library in India.

Madras Agricultural Year-Book.

The Madras Agricultural Department deserves to be complimented on the 1920-21 Year-Book of the Madras Agricultural Department which it has just issued. Included in the contents are the following:—

Natada Nararia, Moore; Sugarcane in South Canara, Livestock of the farm; A preliminary investigation of the "Pollu" disease of pepper in North Malabar in 1918; The poultry flock; Experiments in Grasshopper control by poisoned bait in South India; On the presence of an Ephelis and a Balansia on a common fodder grass, Central Farm, Coimbatore; Some temperature experiments in butter-making; Mango in Alamanda; A preliminary study; Preservation of cut canes; Irrigation water for sugarcane cultivation; Feeding value of cotton seed; Helminthosporium disease on rice (*Oryza Sativa*); Effect of quality of seedlings on yield of paddy; Analyses of varieties of rice; Note on the trials with Nitrolim as a fertilizer for paddy and other crops.

The Oil Industry of India.

By R. M. Vakil, Late Chemist to Messrs. Jamat's Cotton and Produce Co., Ltd., Burma, Messrs. Tarporewalla & Co., Hornby Road, Bombay. Price Re. 1—4—0.

This is an urgent appeal by an Indian industrialist to his countrymen to wake up and do something to modernize the oil industry of their country. He is armed with facts and figures, and his optimism is not of the hollow kind. He is for an intelligent appreciation of the Indian position and to make the most of it from an Indian point of view. None can quarrel with him for his views; rather every one will wish him success in his propagandistic work. It is to be hoped that the booklet will serve the purpose of an eye-opener.

Wheat Crop in the United Provinces.

The above Bulletin (No. 122 of 1921) issued by the Agricultural Research Institute, Pusa, gives in detail the steps taken to replace the country crop of wheat by better varieties, viz., Pusa 12 and Pusa 4 in the Central Circle of the United Provinces.

Up to the year 1908, it was generally believed in the wheat trade that India could only produce wheats of relatively poor grain quality. In order to ascertain whether this necessarily applied to all Indian varieties a large number of the new types of wheat isolated at Pusa were sent to England for complete milling and baking tests and it was found out that the new varieties possessed the character of free milling and also yielded flour and leaves of the same class as that produced from the strongest North American grades and that such strong, free milling wheats could be grown at Pusa and in all the wheat-growing regions of India including the canal-irrigated tracts of the Punjab and the black soils of the Peninsula. This class of wheat was also preferred by the Indian consumer. Thus in order to place India on a similar plane to Canada in the wheat markets of the world it was considered necessary that systematic effort should be made to replace the country crop by the new wheat.

The Bulletin describes the work which has been done in this direction in the Central Circle of the United Provinces. Pusa 12 is being systematically distributed on the alluvial soils of the middle Doab and in the Oudh districts of the circle. The distribution of Pusa 4 is largely confined to Bundelkhand. Besides working out the best methods of seed distribution a beginning has been made in bringing the wheats to the notice of the trade. Two experimental shipments of Pusa 12 and Pusa 4 were sent to England in 1915 and 1916 for large scale milling trials and the results are given in detail in Chapter IV of the Bulletin. The price of this bulletin is annas 12 and can be had from the Superintendent, Government Printing, India, Calcutta.

Crop Pest Calendar.

Bulletin No. 80 of the Department of Agriculture, Madras, entitled "The Entomologist's Crop Pest Calendar for the Madras Presidency," by T. V. Ramakrishna Ayyar, Assistant Entomologist, Madras, ought to prove a valuable aid to the practical farmer in this country. The following from the opening paragraph of the *Bulletin* indicates its exact scope:—"In almost every agricultural tract one often comes across intelligent farmers who are able to tell us with a certain amount of confidence and precision, about the important insect pests that appear on the various crops grown by ryots in their tract season after season. In certain localities there are landholders found who not only possess this knowledge but are also able to pronounce rough predictions regarding the approximate time of appearance of the important pests every year. This is of course due to previous experience, and in spite of the fact that there may be mistakes in such information, they are not found altogether valueless. In the same way that the farmer of one particular locality is enabled to predict such a thing in his tract, the Agricultural Department, with its experience of over a decade in the past, is now in a position to roughly indicate the time of appearance of important crop pests during any normal year in all the different agricultural tracts of the Madras Presidency with perhaps a little more definiteness based on scientific knowledge. This information collected together and properly arranged may be called the 'Entomologist's Crop Pest Calendar for the Madras Presidency' and it is this sort of information that is attempted in this pamphlet'. The Bulletin may be obtained from the Superintendent, Government Press, Madras. Price 2 annas.

World's Mineral Industry.

The Director of Publications, H.M. Stationery Office, London, has just issued '*The Statistical Summary of the Mineral Industry of the British Empire and Foreign Countries*'. The tables included in the Summary constitute the first issue of the Annual Summary of the Mineral and Metal Statistics of production, imports and exports in respect of the British Empire and Foreign countries, covering, in the present instance, the year preceding the war (1913), the war period, viz., the years 1914—1918 inclusive, and the year 1919, the figures for 1920 being given where they are available to date. In so far as the period 1913—1919 (inclusive) is concerned, the figures are, generally speaking, as complete as possible in the circumstances of War, but for the year 1920 they are incomplete, and are to be regarded as in the nature of advance figures only, subject, therefore, to revision. Towards the close of the present year the statement will be issued in revised form. Certain substances, such as oil shale, strontianite, salt, china clay, and building and other stones have not been included in this advance summary but will appear in the revised issue later on, and the same is true of pig iron. In the case of petroleum, statistics as to production only are given; the later issue of the summary will contain statistics as to exports and imports. The summary may be obtained from H. M. Stationery Office, Imperial House, Kingsway London, W.C. 2. (Price 3s. net.)

A work on "Agricultural Progress in Western India" by Mr. G. Keatinge, C.I.E., I.C.S., will shortly be published by Messrs. Longmans. Mr. Keatinge read a paper on the same subject before the Indian section of the Royal Society of Arts on January 16th. 1913.

Life and Teachings of Karl Marx.

By M. Beer, Author of *A History of British Socialism*.—Published by the National Labour Press, Ltd., 8 & 9, Johnson's Court, London, E.C. 4.

This is a fascinating life of the great socialist leader, Marx. M. Beer writes with sympathy and his study includes much new matter made available to the public for the first time now. Written originally to mark the centenary of Marx, it has been issued in English by the National Labour Press as Vol. 2 in the Social Studies Series. As a biography is an eminently reliable one and for the exposition of Karl Marx's views, economic and other, it is, we think, not to be underrated. A special feature of the book is the new light thrown on Marx's attitude to the "Dictatorship of the Proletariat" and Bolshevist methods generally. So far as we know this is the first English work which gives this information, and for this and much other that is found included in it, the book is bound to take a high place in literature relating to Marx and his doctrines. We would specially invite attention to Chapter IV of the book before closing this brief review, for it contains a reliable account of Marx's views, all told in 30 pages. We commend the book to readers of socialism in this part of the world.

Acknowledgment.

1. *Geological Department Report for the year 1919-20*.—Government Press, Bangalore.
2. *Proceedings of the Birthday Session of the Mysore Representative Assembly, June 1921*.—Government Press, Bangalore.
3. *Mineral Deposits of Gwalior, Nos. 1 to 16*.—A. D. Press, Gwalior.
4. *Report on the Administration of Cochin*.—Government Press, Ernakulam.
5. *The Administration Report of Mysore for 1920-21*.—Government Press, Bangalore.
6. *Report of the Committee appointed by the Secretary of State for India to enquire into the administration and working of Indian Railways*.—His Majesty's Stationery Office for the India Office, London.

The United Association of Solingen Cutlery Manufacturers has decided that the local ruling prices of steel are too high, and has taken steps to force a reduction in the quotations.

The Chihli Construction Corporation has been formed in Tientsin with a capital of \$35,000,000, of which \$9,000,000 is said to have already been paid up, for port development and other enterprises.

The daily need of Austria in coal is 48,000 tons, of which only 43 per cent is available.

Guadeloupe's vanilla crop for 1920-21 is estimated at 85,000 lbs. or twice as much as last season.

From 50,000 to 60,000 pumice stones, at about 18.0 lire a piece, are available monthly for export from Turin.

The managing director of the Canton-Hankow Railways has started a tour of inspection of the transport systems of the United States and Europe with a view to the introduction of improvements in China.

Leaders in Finance and Industries.

CHARACTER SKETCH OF THE BRANTING.

Hjalmar Branting.

THE GRAND OLD MAN OF SWEDEN.

Mr. K. E. Primus-Nyman, in an interesting sketch of Mr. Branting in the *Labour Leader*, writes thus:—

Thursday, the 13th of October 1921, is a memorable day to the International Labour movement in general, and to the workers of Sweden in particular. About midday on that day an important "change of guard" took place. Scarcely had the members of the former Swedish Cabinet left the Castle before the new members of the present Socialist Cabinet entered. The "change of guard" concerned one of Europe's oldest empires, and the new "guard" consisted of Hjalmar Branting's Social Democratic colleagues.

Hjalmar Branting, the creator of Swedish Socialism, succeeded over all expectations in forming a strong Socialist Cabinet. The greatest burden falls upon his own shoulders, for he has accepted the duties of Prime Minister as well as those of Foreign Minister. Particularly the latter selection must be greeted with satisfaction by every friend of peace, for Branting has already on several occasions saved his country from many a bloody war. During the Union crisis between Sweden and Norway in 1905, it was, thanks to the courageous action of Branting and our Socialist comrades in Sweden, that a terrible war was averted between two of Europe's most enlightened and most closely related sister-nations. Then Branting was branded as a "traitor" by most of the capitalist organs. But during the recent Aaland crisis, when the relations between Finland and Sweden were somewhat strained, it was generally considered in Sweden that there was only one man in the country who was capable of dealing successfully with this delicate question, and that man was Branting. Once, a 'traitor', he was only a decade and a half afterwards the saviour of his country. And during the bloody European War that we have but just waded through it was once more Branting who prevented the pro-Hun (not pro-German) sabre-rattlers of Sweden from hurling their country into the European bloodpool on the side of Germany's worst enemies, the ex-Kaiser and the criminal camarilla.

Hjalmar Branting is not only the "Grand Old Man" of his country, but he is also "the strong man" of Sweden. For there are none, if any, European Statesmen who enjoy such a unique international reputation amongst friends as well as amongst enemies, as Branting. His name alone, as Foreign Minister of Sweden, is the best guarantee for an honest and peaceful Foreign policy of at least one European country. And even that fact must be hailed with satisfaction in critical times like the present.

Branting has been particularly successful in the selection of colleagues. Many of the new Ministers have had experience in Sweden's last Socialist Cabinet or in the Liberal-Labour Cabinet during the war. Three of them, Assar Akerman, Albin Hansson and Olof Olsson, return to their old posts in the first Socialist Cabinet as respectively Ministers of Justice, Defence, and Education. Herman Lindquist, the new

Social Minister, is the well-known Swedish Trade Union leader, and the new Minister of Communications, Anders Orne, is one of the leaders of the co-operative movement. The Minister of Finance, F. V. Thorsson, has had previous experience in the Labour-Liberal Cabinet during the war, and C. E. Svensson, now Minister of Commerce, was in charge of the Communications Department in the last Government. The new Minister of Agriculture, Sven Linders, enjoys an equally high reputation amongst the farmers as amongst the agricultural workers. The three Ministers without portfolios, Richard Sandler, Thorsten Nothin, and K. J. D. Schlyter, are well-known Social Democrats, the first mentioned is a Doctor of Philosophy and the two latter are prominent lawyers.

The programme of Sweden's "Red" Cabinet has recently been shortly outlined. Sweden will be supporting the League of Nations in its peace efforts. All tendencies towards disarmament will, of course, be warmly cherished and welcomed. The trusts will be put under a strict control, and proposals will be put forward about industrial democracy. But the unemployment problem will be given a particular attention by this Socialist Cabinet, and in its efforts to solve this problem the Swedish Government can count upon the fullest support of Sweden's organized workers and Socialists.

Sir Ernest Cassel.

A London correspondent writes:—Sir Ernest Cassel, the famous financier, died suddenly on September 21, from heart disease, at his Park Lane residence. Born in Cologne in 1852, the son of a Jewish banker, he came to England as a young man and very soon acquired the reputation of a sound man of business; and the position he made for himself both in the city and the society affords the best proof possible of his force of character. During his early years in this country Sir Ernest was interested chiefly in South American finance, but later he turned to other quarters of the globe, and his name is associated with several highly important undertakings in the Near East. As a young man he had been engaged in setting the accounts of the Khedivial loans and transactions in order, and this probably accounted in some measure for his taking such an important part in financing the Nile irrigation works and other works of development in Egypt. With Sir John Aird he was chiefly responsible for the two great dams, at Assouan and at Assiut, which added so largely to the cultivable area of Egypt; and he was the founder of the Agricultural Bank of Egypt. He was also largely interested, later, in the National Bank of Turkey. Of his vast interests in other parts of the world nothing need be said here. Nor is this the place to record his very considerable charitable gifts. But it may be noted that he contributed some £40,000 for hospital work in Egypt.

Mysore Economic Development Board.

Progress Reports.

MYSORE INDUSTRIES & COMMERCE BOARD.

The following are the Proceedings of the Eighth Meeting of the Board of Industries and Commerce, held on Saturday, the 13th August 1921, at the Chambers of the First Member of Council, Public Offices, Bangalore, at 3 P.M., Mr. P. Raghavendra Rao, B.A., B.L. (Chairman) being in the chair.

I. Proposals of Mr. Alderton to open a few model cane depots in the State.

The Chairman observed that past experience had shown that experiments in cane curing and seasoning had not proved quite successful, and it was doubtful whether in view of the limited quantity of the raw materials available as well as the lack of men acquainted with the methods of curing cane scientifically, the attempts to open a few depots would in any way materially help to encourage the development of rattan industry in the State.

After discussion, the following Resolution was adopted:—

Resolved (a) that the Conservator of Forests be requested to supply the Superintendent of the Chamarajendra Technical Institute, Mysore, with quantities of not less than 100 maunds of each of the four varieties referred to above.

(b) That the Superintendent of the Chamarajendra Technical Institute, Mysore, be requested to cure them in the seasoning kiln newly put up in the Institute and carry on experiments with the same and let the Forest Department know on what lines further action to develop the industry should be taken.

(c) That the Conservator of Forests be requested to furnish all literature relating to Singapore cane before the next meeting.

(d) That he be also requested to introduce fresh varieties of cane, similar to the Singapore canes in the State Forests.

II. Report of the Malnad Arecanut Deputation.

The Chairman briefly explained the history of the subject and said that Government were not in a position at present to finance the scheme of forming a syndicate to finance the arecanut growers as recommended by the deputation. He, therefore, observed that the subject could only have an academical interest. He asked the Deputy Director of Commerce whether he could suggest any practical course of action for giving effect to the other recommendations contained in the report, namely, preparation of the Malnad Areca to suit the Bombay market conditions, diversion of areca trade from Bellary, etc. He also referred to the assurance given by Mr. H. Subba Rao of Davangere at one of the Board meetings last year, that he would be glad to help the Malnad Areca Growers in the matter of finance through the Bank of Mysore provided they came to him in time for help.

The Chairman referred to the summary of the report which was already circulated to the Members and the resolution of the Board at their fifth meeting held on 20th November 1920. He then read out the opinions of the Chitaldrug and Kadur District Boards on the report and said that the views of the Shimoga District Board were awaited.

It was decided to defer the subject for further consideration at the next meeting of the Board and that, in the meanwhile, the members might again be furnished with a copy of the summary of the report of the Malnad Arecanut Deputation and the opinions of the Shimoga, Kadur and Chitaldrug Boards thereon. It was also suggested that Mr. Hosakoppa Krishna Rao might be requested to be present at the next meeting of the Board to explain personally the scope of the subject.

Resolved that the report of the Malnad Arecanut Deputation be deferred for further consideration at the next meeting after the receipt of the views of the Shimoga District Board.

III. Establishment of an up-to-date Sugar Factory in the State.

The Director of Industries and Commerce explained the recommendations of the Sugar Sub-Committee and said that, unless the Sulekere area which offered at present the best prospect for starting a sugar factory was taken up for development at once, the scheme of establishing a sugar industry in the State would have to lie over for some years to come. He said that the Sub-Committee had carefully gone into the question and they thought that it would be possible to secure at once in the Sulekere Area the minimum extent of land required for an economic unit of a sugar factory. As regards the terms on which land might be granted to any company the Sub-Committee has considered whether it would be better to recommend the sale of the lands outright at a reasonable upset price or the leasing out of the lands to a company for a sufficiently long period at reasonable rental per acre with option of renewing the lease at the end of the period. The Sub-Committee were of opinion that it was inadvisable to sell the lands outright as Government would thereby lose their hold entirely on the lands which were a very valuable asset to the State. They therefore thought it better to adopt the latter procedure. It was estimated that the sale of 3,000 acres in the area would fetch Government a sum of three lakhs of rupees. The interest on rupees three lakhs at 7 % worked up to Rs. 21,000 per year. They therefore resolved to recommend that 3,000 acres of land owned by Government might be leased out to a company for a period of 30 years in the first instance at Rs. 7 per acre in addition to the ordinary dry assessment and water rate prevailing in the area.

With regard to finance, the Sub-Committee thought that, with a view to create confidence in the investing public, Government might be requested to take shares to the value of Rupees One lakh. They also suggested certain other safeguards for safeguarding the interests of the local people.

Mr. K. P. Puttanna Chetty pointed out that the success of a sugar factory depended entirely on a perennial source of water-supply from rivers and channels and doubted very much whether it would be safe to depend on the Sulekere tank for the supply of water to the sugarcane on a large scale proposed to be grown in the area. He remarked that he had

personally seen the tank completely dried up in certain years. He was therefore of opinion that the question of water-supply required a more careful examination.

Mr. B. K. Garudachar concurred with Mr. Puttanna Chetty and added that the production of sugar on an economic and a commercial scale was very much handicapped just at present owing to the sudden fall in the price of imported sugar by nearly 50 per cent during the last few months. He said that he was given to understand that the Tata Sugar Corporation, Ltd., had also given up the idea of manufacturing sugar on a large scale under the present circumstances and that they were concentrating their attention in the manufacture of jaggery.

Mr. Md. Abbas Khan enquired if any specific applications had been received from private companies or individuals who were willing to start the factory.

The Chairman replied that a few applications had been received from private persons and companies. He suggested that there was no harm in recommending to Government the announcement of certain specific concessions which they were prepared to grant for those who were willing to undertake the starting of a big sugar factory in the State. He was therefore of opinion that the following recommendations of the Sugar Sub-Committee might be accepted and sent up to Government so that it might be left entirely to private enterprise to take advantage of the concession offered or not.

1. That a decision should be immediately arrived at, as to whether about 3,000 acres of land under the Sulekere tank included in the date reserve could be thrown out for cultivation if a private company should come forward to start a sugar factory.

2. That Government might lease out 3,000 acres of land to any private company willing to start the factory for a period of 30 years in the first instance on a yearly rental of Rs. 7 per acre exclusive of the ordinary dry assessment and water rate with option to the company for renewing the lease at the expiry of the period for a further period of 30 years on terms to be agreed upon.

3. That the Company should be asked to make their own arrangements with the private land-owners in regard to the additional supply of cane required by the factory.

4. That one of the conditions of grant should be that not less than $\frac{1}{4}$ of the share capital of the proposed company should be thrown open exclusively to the Mysore people for at least 3 months in the first instance.

5. That in the event of the Mysore public not subscribing towards the share capital within the period stipulated, Government should in the first instance underwrite the amount either directly or through the Bank of Mysore.

6. That Government might take shares to the value of one lakh of rupees in the concern with a view to create confidence in the minds of the investing public.

7. That a sufficient number of Government Directors should be appointed to safeguard the interests of the people in Mysore and Government?

8. The Committee recommend that the Government be advised to advertise widely that they are prepared to grant the above concessions and call for applications from private syndicates or companies willing to undertake to start a sugar factory with the assistance promised.

Resolved that the above recommendations of the Sugar Sub-Committee be approved and that Govern-

ment be requested to take suitable action in the matter.

IV. Loan application of Mr. Zainullabdin Saheb of Shimoga for Rs. 16,000 to start a rice mill.

Resolved that the loan application of Mr. Zainullabdin Saheb of Shimoga for Rs. 16,000 to start a rice mill at Shimoga be recommended to Government for sanction.

V. That the Conference recommends to Government that Government should henceforward instead of directly issuing loans to the public for industrial purposes, make suitable arrangements with any Bank willing to finance private industrial concerns approved by Government to be drawn up by mutual agreement between the Government and representatives of the Bank.

The Chairman referred to the discussion at the last Conference on the subject and said that Government may not, for some time to come, be in a position to finance any private agency willing to undertake the provision of funds for industrial finance. As stated at the last Conference Government would continue to grant loans to small industrial concerns as contemplated in the Indian Industries Commission Report and that it was only with regard to the financing of larger industrial concerns that the agency of a Bank was proposed to be utilized. It was left to the Board to say what was a large industrial concern and up to what limit Government should finance industries directly themselves. Though Government would not be able to render any substantial financial aid to any Bank that might come forward to undertake the work, it might however be prepared to share to a reasonable extent in the risks that the Bank might sustain in the course of its transactions. In this connection he referred to the recommendation of the Special Committee which was appointed to go into the question of expanding the usefulness of the operations of the Mysore Bank to develop the Industries and Commerce of the State.

Some members wanted to know whether Government proposed to deposit a certain amount in the Bank for the issue of loans and whether it would have any control in the grant of loans to the public. The Chairman replied that Government might deposit a fixed sum for the purpose. It was all a question of detail which might be left to Government and the Bank as the proposition itself explained. The Department of Industries and Commerce would examine the application for loan and furnish the necessary certificates to the Bank as regards the soundness of the undertaking, but it would have no control over the actual grant and repayments of loans which would have to be attended to entirely by the Bank itself. He added that Government stood to gain nothing in the transaction. After some discussion the members were all of opinion that, if a private banking agency was willing to come forward to provide industrial finance without expecting Government to provide any funds but on the understanding that Government should only share any possible loss in reasonable portion with the Bank, the proposition may be favourably considered, the details of arrangements being settled between the Bank and the Government.

Resolved that the general principle contained in the proposition referred to above might be recommended to Government for favourable consideration and that the details might be worked out by mutual agreement between the Government and the representatives of the Bank to which Government might finally entrust the work.

VI. That a Labour Bureau be established in the

State to protect the interests of the labour classes.

After some discussion the Chairman said that the work might be very well attended to by the Department of Industries and Commerce.

Resolved that the question of establishing a Labour Bureau in the State be deferred for the present as conditions in the State have not yet arrived at such a stage when the constitution of the organization would be immediately necessary.

VII. Proceedings of the Mineral Sub-Committee.

The Director of Geology referred to the formation of a big syndicate to deal exclusively with all minerals in the State except gold and wanted to know if Government would be willing to finance the scheme to the extent of five lakhs of rupees and whether it would be willing to give exclusive monopoly rights over all minerals except gold to the syndicate. He wished to know what views Government were likely to take on these points so that the Sub-Committee might further consider the question and send up their final recommendation in the matter.

Mr. V. Manickavelu Mudaliar agreed with the above remarks.

With regard to the question of finance, the Chairman said that it was unlikely that Government could render any financial assistance to the syndicate. As regards the other points raised he said that the Sub-Committee might further consider the question and see whether the creation of an exclusive monopoly to any particular syndicate would be fair. He added that, if the Sub-Committee, on further consideration, thought that the monopoly should be given to a single company, as proposed, for a thorough exploitation of the minerals, they might formulate definite proposals without prejudice to the existing licensees or lessees and small enterprises which deserved encouragement.

Resolved that the proposal of the Sub-Committee be further considered and that a definite scheme regarding the formation of a syndicate referred to in the proceedings without expecting any financial help from Government be brought forward, at the next meeting of the Board for consideration.

VIII. Proceedings of the Commercial Museum Sub-Committee.

The Sub-Committee recommended the following three propositions to be sent up to Government for favourable orders :—

1. That a recommendation be made for the establishment of a Travelling Museum on the model of Travelling Libraries and to open branch museums at Bombay, Calcutta and Madras with a view to give an idea to the metropolitan people regarding the principal raw material and industries of the State.

2. That a recommendation be sent up to Government for the removal of the Central Commercial Museum now held at the Exhibition Buildings to a decent rented building at Siajee Row Road or Doddapetta.

3. That an Advisory Body consisting of a few leading merchants and businessmen be formed in the State with a view to discuss matters and offer suggestions regarding the improvement of the museum, that it may meet once in three months with the Deputy Director of Commerce as convener and that a visitors' book may also be maintained at the museum.

After discussion the following Resolution was adopted :—

Resolved that recommendation No. 2 of the Sub-Committee, *viz.*, the location of the Central Commer-

cial Museum in a more central place in Mysore City be approved and sent up to Government for favourable orders.

U. P. Board of Industries.

The following Press Note has been issued :—A meeting of the Board of Industries, U. P., was held at the Government Technical School, Lucknow, on Monday, the 5th September 1921. A number of applications for financial assistance was considered by the Board. The Council have recently allotted a substantial sum of money to be utilized by the Board in aid of Industries, a grant which the Board utilized to meet, as far as possible, the wishes of the applicants. In one case, as it was not a pioneer industry, the loan was not recommended to Government. In the second case, as the industry to be started is a pioneer industry, the grant of a loan has been recommended to Government. The Board strongly supported the idea of the local Government's participation in the Industries fair to be held in the United Kingdom next year. The Board appointed a Sub-Committee consisting of Messrs. Clarke, Standley, Sri Ram Khanna, and the Secretary of the Board to consider the question whether legislation on the lines of the Berar Cotton and Grain Markets Law of 1897, was advisable for these Provinces and if cotton markets ought, in the Committee's opinion, to be regulated, to determine the places to which the Act should be applied. The Sub-Committee co-opted Messrs. Cocalos, Anandji Lal Chand, Rai Bahadur Brij Lal Badhwar and Dr. Parr, Deputy Director of Agriculture. Another Sub-Committee consisting of Messrs. Makbul Hussain, parshani, Dr. Watson and Mr. Srivastava, with Mr. C. R. Misra as convener, was appointed to consider the advisability of opening a Provincial Museum in Cawnpore. The Board requested Government to nominate a Committee to examine the question of establishing an Industrial Bank for these Provinces. The Government of India's letter suggesting provision for compensation to workmen for injuries received in the course of their employment was discussed at length. The majority of members were in favour of the acceptance of the principle of owner's liability. They, however, considered that legislation on the lines of the existing Act in the United Kingdom would be premature.

On the 14th November, the Board of Industries met at Lucknow and transacted the following business : (1) The Sub-Committee's report, recommending the establishment of an experimental cotton market on the Berar lines at Nathras or elsewhere to test the utility of legislation on the lines of the Berar Cotton Markets Law, was adopted. (2) The Sub-Committee's report, recommending an experimental Commercial Museum at Cawnpore for the exposition mainly of U. P. products, coupled with a provision of Rs. 10,000 for Show-cases, etc., was recommended to the Government. (3) On a reference made by the Upper India Chamber of Commerce, it was resolved to recommend the following measures for securing Industrial Peace, *viz.*, (a) appointment of a Joint Works Committee in each concern, (b) creation of fully representative Conciliation Boards, from whose panel a Conciliation Court could be appointed *ad hoc* to deal with disputes (in every concern, whether Public utility or not), such Boards being however for the present confined to concentrated Industrial areas only, and (c) rejection of the application of legal compulsion. (4) The procedure suggested by the Director of Public Health for the collection of Industrial Health Statistics, *viz.*, compulsory furnishing

by employers of monthly statements showing deaths (which causes) of employees, was considered unworkable, and labour being still only casual, no really satisfactory alternative scheme could be suggested. (5) On the subject of Trade Unions, the Board's recommendations were that (a) the definition should be based on a specific statutory enumeration of aims and objects? (b) no form of political activity should be recognized, (c) unionism should cease to be illegal, (d) a Union's domestic affairs and internal management should be amenable to the ordinary law, (e) registration should be compulsory and provisions regarding registration should be made by rule (not by statute) and the Registrar's refusal to register should be appealable. (f) Union Funds should be governed by the Law of Trusts, (g) minors may join Unions, (h) no form of picketing should be recognized, (i) Union accounts should be subject to audit by auditors recognized by Government. (6) The principle of Labour Exchanges was accepted, but their establishment in these Provinces were considered premature. (7) British Chambers of Commerce in foreign countries should be given a special form of recognition and special powers under purely British control, and they should be called British Empire Chamber of Commerce. (8) As to the Director of Industries' Almora Industrial School Scheme it was resolved to recommend only Carpentry and Blacksmithy classes for the present. (9) The Director of Industries' Doyal Bagh Technical School Scheme (for a substantial grant-in-aid to the existing "Model Industry" and expanding it into an aided Divisional Technical School) was accepted in toto. (10) The Board did not see their way to advise the Government to make a loan of 10 to 12 lakhs to the U. P. Electric Supply Co. of Lucknow to enable them to take over the power plant ordered by the Municipal Board,

Lucknow. (11) The Board rejected Dr. Watson's motion in favour of Imperial Preference and Special Protection of Dyestuffs.

Advisory Committee for Madras.

The following Order (No. 2125, Development, dated 14th November 1921) has been issued by the Madras Government:—His Excellency the Governor resolves to appoint a Standing Committee for Agriculture and Co-operation with the Hon'ble Rai Bahadur K. Venkata Reddi Nayudu Garu, Minister for Development, as President, and the following gentlemen as members:—

- (1) J. A. Richardson, Esq., M.L.C.
- (2) M.R.Ry. V. C. Vellingiri Kavandar Avargal, M.L.C.
- (3) „ J. Kuppaswami Avargal, M.L.C.
- (4) „ T. Somasundara Mudaliar Avargal, M.L.C.
- (5) „ K. Adinarayana Reddi Garu, M.L.C.
- (6) „ K. Gopalakrishnayya Garu, M.L.C.
- (7) „ Diwan Bahadur C. Arunachala Mudaliar Avargal, M.L.C.
- (8) „ K. Prabhakaran Tampan Avargal, M.L.C.
- (9) „ B. Muniswami Nayudu Garu, M.L.C.
- (10) „ K. Sadasiva Bhat Avargal, M.L.C.

M.R.Ry. P. Subbarayan Avargal, M.L.C., and the Secretary to Government, Development Department, will be ex-officio members of the Committee and the latter officer will act as its Secretary. The Director of Agriculture and the Registrar of Co-operative Societies will attend the meetings of the Committee. The President may nominate to the Committee temporarily local members for the discussion of local subjects. The functions of the Committee will be advisory.

Improvement in Method of Planting Cassava.

Mr. A. B. Carr, a director of the Agricultural Society of Trinidad and a prominent estate owner, has furnished the United States Consul in Trinidad with the following note as to a method he has discovered of shortening, by about one-half, the time required for the ripening of cassava tubers:

"Hitherto the way of planting the cassava was in short portions of the stalk, measuring from six to nine inches long; but purely by an accident it has been found that when the whole length of stalk of a cassava plant is planted the tubers ripen and are fit to eat in 4½ months, against the old method which involves at least 8 months. The manner of planting is simply to insert the lower end of the stalk into the ground not more than two or three inches deep; and in order to secure the growing plant against the force of the wind, if in an exposed position, the plant should be tied to a stake. Planting is usually done in the month of May. In new lands as much as 12 to 15 tons of fresh tubers can be obtained, whereas in old, partially worn-out lands, unless a liberal supply of manure is allowed, not more than six to eight tons of tubers can be depended on."

This, says the Consul, should have great importance in practically doubling the cassava turnover from estates growing it.

Concerning the uses of cassava in Trinidad, Mr. Carr writes:

- "1. It is eaten as a vegetable, boiled in plain water.
- "2. It is made into what is known as farine, which is a coarse form of meal.
- "3. After expressing the juice, the dry tuber is

grafted into a meal, which upon being exposed to heat on a flat iron-plate is made into bread.

"4. The expressed juice is boiled down and certain condiments are added thus producing casareep, which is the foundation of many good sauces.

"5. Starch is also made from the tuber, the method of manufacture consisting simply of allowing the expressed juice to settle, the heavy matter being precipitated and when dried forming the starch of commerce.

It is known that alcohol can be produced from the cassava, which also contains sugar. If the price of sugar remains abnormal for a lengthy period of time it is likely that scientists will turn their attention to the sugar contents of this tuber."

The cassava sauce known as casareep appears to have preservative as well as flavouring qualities and is an indispensable ingredient in the well-known West Indian dish, "pepper pot," which is especially popular in British Guiana, where casareep is manufactured in commercial quantities.

In connection with the industrial use of the cassava plant for the manufacture of alcohol, it may be mentioned that an Englishman was recently in Trinidad and British Guiana, investigating districts most suitable for cassava growing, and it is understood that in British Guiana about 10,000 acres of land were purchased for such purpose on behalf of distillery interests in Scotland. It is reported that large areas of cassava land in Madagascar and in Brazil have also been purchased for the same interests.



Banking and Finance.

INDIAN AND FOREIGN.



Credit Position in East Africa in 1920-21.

One of the legacies left to East Africa by the Germans is an extensive credit system ; the regular trade with supposedly good Indian business houses being on a 90 days' bill, and this subject to further renewal in whole or in part, states H. M. Trade Commissioner at Nairobi, Kenya Colony, in his report on the Trade and Commercial Prospects of East Africa (Uganda Protectorate, Kenya Colony, Tanganyika Territory and Zanzibar). (H. M. Stationery Office, price 1s. 3d. net.) It is soon realized, with the granting of such terms, how the Germans secured such a strong hold on East African Trade in pre-war days, and what a contributory source it was to the financial conditions of the whole trade of the country to-day. Cases are known in which one parcel of goods has been the sole security for three or four lots of 90 days' bills, and it will readily be seen how big a drawback this has been to proper banking and how great a source of anxiety and loss to European merchants. Another result is that the Indian has been trading on the capital of the European firm, with the inevitable consequence that in many cases profits, instead of being invested in the country, have been remitted to India. This has been particularly evident during the period under review, during which the Indian rupee has fluctuated from 2s. 8½d. to 1s. 3¾d., and it is freely stated that many parcels sold one day on a 90 days' bill are turned into money the next day at a heavy discount in order that the Indian can gamble on the exchange with India.

STABILIZATION OF CREDIT TERMS.

Strong efforts are being made to put the common credit terms on a proper basis, but the state of business all round is such that the temptation to get rid of stocks that even daily are reducing in value is too much for many to withstand. As in India, the practice has become very common for drafts against shipment to be refused on presentation when the market is against the buyer, and in investigating various complaints it has often been found that they revolve round shipments made by United Kingdom firms to Indian firms whose bank report would not warrant any foreign credit.

In some cases it would seem that shippers unwarrantably consider themselves protected by the buyer agreeing to pay cash on the presentation of the drafts on arrival of the goods. This is a pure fallacy, because that class of buyer will not meet his drafts unless it is to his advantage. Except with the few reliable and thoroughly financially sound Indian houses, it would seem most inadvisable to have any direct dealings unless the United Kingdom shipper has a branch house here, in which case he has an opportunity of watching his credit.

Whilst the local credits are in a state of flux, the importers' position is made at the moment even more difficult than usual through the stringency of the world's money market. The European banks are negotiating drafts on East Africa for 50 per cent of the invoice value of shipments only.

The above represents the conditions as they have obtained till lately, and the financial stringency of to-day has, of course, reacted here. Banking facilities, though possibly too easy in the past, are now limited, yet a tribute must be paid to the established banks for their avoidance of harsh measures towards their debtors amongst the farming and commercial communities. With the resumption of more normal conditions it is hoped that better credit facilities will prevail, though this will depend on the policy adopted by the German shipping houses, and whether these latter will endeavour to compete for the market on a commercial or political basis.

Export Credits and the Empire.

Lord Northcliffe's speech on Australia's need of population has an economic importance of exceptional interest at the present time, writes the City Editor of "The Times". The relief of unemployment has brought the question of credits to the fore once more. The Government's export credit scheme has been in operation for some time, and the fact that comparatively little has been made of it shows that the legitimate demand for credit as distinguished from loans made out of savings for the distressed countries of Europe is not very large or really difficult to meet. Credits for reconstruction purposes are a more difficult problem, and until steps have been taken to initiate financial reform in the countries concerned it will be difficult to provide Europe with the money that is necessary to establish a medium of exchange (*i.e.*, currency). An export credit scheme is no substitute for sound currency, and any extension of it (which is what the Government has in mind) that does not recognise that fact will do more harm than good. Credits will be freely forthcoming when sound currency conditions are established. Therefore, it is important to concentrate upon the problem of establishing a sound currency in the distressed countries.

EUROPEAN COMPETITION.

It must, however, be borne in mind that Europe has never been financed by Britain, because for the most part the industries of Europe (with the notable exception of Russia and other Eastern European countries) are mainly competitive with those of this country. The problem of giving employment by the supply of credit to the Oversea Dominions is comparatively simple. The largest proportion of British exports are sold to different parts of the Empire in payment for foodstuffs and raw materials. Trade in the British Empire is mainly complementary, not competitive. This is becoming much more clearly recognised than in the past. Mr. Churchill at the Gold Coast dinner urged that work should be provided for the unemployed by the opening up of Africa.

COMPLEMENTARY PRODUCTION.

Major Ewart Scott Grogan has followed up this line of argument in a letter to the *Times*, in which he says :

England cannot subsist by lending Australian wool, New Zealand mutton, Uganda cotton, and Welsh coal to industrial Europe in the hope of ultimate interest and sinking fund payable in competitive German rails, Belgian cement, Austrian piece-goods, and French wines. Surely it is wiser to lend Sheffield rails, Grave-send cement, Manchester piece-goods, and Birmingham wire to primary Africa in the certainty of continuing and increasing dividends of complementary raw cotton, hides, flax, sisal, coffee, oilseeds, maize, and rice.

If the United Kingdom invited the Empire to tabulate all its road, rail, canal, and port schemes in the order of their importance in opening up new markets and facilitating inter-Imperial exchange of staple products; offered to lend on a 10-year programme an amount of £1,000,000,000 sterling at a low rate of interest and on a long term of redemption, both payable in sterling notes only and subject to the sole proviso that all equipment should be purchased within the Empire; produced an *ad hoc* issue of frankly inconvertible notes, and appointed an *ad hoc* currency board irrevocably instructed and empowered to receive the sterling notes, payable as interest and fund, and to retire the same as and when received — what would happen? Most certainly within six months there would be no unemployment in any of the basic industries, and within 10 years the British Empire would be a complete and self-sufficient economic organism, practically immune to the vagaries of alien currencies and alien markets. Moreover, when the financial operation was complete the *ad hoc* inconvertible note issue would (by the sinking fund factor) have vanished, and with it (by the interest factor) our existing inconvertible note issue.

Lord Denman, formerly Governor-General of Australia, and others have supported Lord Northcliffe's plan, while Sir Arthur Duckham, speaking at a meeting last week of the Ceramic Society, said that one of the most important things to which they had to look to-day was the closer linking of this country with the Dominions. He thought Lord Northcliffe's suggestion of increased emigration to the Dominions was a great idea; and if, instead of talking of giving credit to foreign traders in the hope of being paid back some years hence, credits were given to encourage trade between the Mother Country and the Dominions and Colonies the results, he said, would be much better.

INDIA'S CAPITAL REQUIREMENTS.

Barclay's Bank, in the current number of its magazine, also supports the suggestion to this end made in *The Times*. Many correspondents have written us on the subject strongly supporting it. The Indian Railway Committee, in its report, referred to the starving of the railway system in India and advocated the raising of capital on railway development as fast as it could be spent. Ceylon and South Africa have recently raised loans in this country. The proceeds of their loans will, in fact, be spent in this country. New South Wales is also raising a loan. These are the best type of export credit and should receive every encouragement. India is in need of money for railway construction. Large amounts are required. Money spent on railway construction in India will help to revive our iron and steel industry, which in turn, will put new life into other industries, since the wages paid to railway equipment workers will give purchasing power not only to them but to many other workers as well. Indian railway workmen will buy cotton goods from Lancashire with the wages they earn in building the railways. The railway debt of India will also help us to pay for the goods we need from her.

How the U.S.A. spends its Income.

Analysis by E. B. Rosa, Chief Physicist, U. S. Bureau of Standards.

Total appropriations for year ending June 30, 1920, \$5,686,005,706. 1 % public welfare. This 1 % is divided approximately as follows: Agriculture and development of natural resources, $\frac{3}{4}$; education, $\frac{1}{8}$; public health, 1-14; labor, 1-100. 3 % public works, harbours, rivers, roads, parks, etc. 3.2 % administration of the government, expenses of the Congress, President, department, etc. 92.8 % present armaments (25 %), and past wars (67.8 %), including care of soldiers, pensions, railroad deficit, shipping board, interest on the public debt, European food relief, etc.

Taxation for the federal government for this year averaged fifty dollars per person; of this only fifty cents per person was spent for research, education, and development.

The Women's and Children's Bureaus together received five and one-half thousandths of one per cent of the total income.

India Sterling Loan.

The Secretary of State for India issued on 14th December last the following Prospectus of a Sterling Loan of £10 millions:—The issue price is 93½ and the Loan is repayable in ten years, the rate of interest being 5½%. The loan does not carry any conversion rights. Arrangements have been made under which subscriptions can be received in India at the Office of the Imperial Bank at Calcutta, Bombay, Madras and Rangoon, which will send intimation to the Bank's London Office by "Clear the Line" telegrams. Subscriptions from India will be received in London to within 24 hours after the closing of the list to Home subscribers. Subscription list in London will, if the whole loan be not subscribed for earlier, remain open not later than Monday, the 19th December. Further particulars regarding the procedure for subscribing in India and also the actual terms of Prospectus can be obtained from the Offices of the Imperial Bank at the above mentioned places. The interest payable on the loan will be paid in full without deduction of British income-tax on proof being given to Inland Revenue Authorities in England that the owner is not resident in the United Kingdom.

This loan is being floated having regard to the present favourable condition of the Money-market in London and to the necessity for supplementing Rupee Borrowing to the greatest extent consistent with the obtaining of reasonable terms for financing the Government of India's Capital requirements including adequate expenditure on the rehabilitation of the railways.

Rumania textile industries, according to H. M. Commercial Secretary at Bukarest, are suffering from scarcity of cotton and cotton yarns as well as dye materials. Considerable quantities of yarn are held up at the ports in consequence of lack of transport and the disinclination of the importers to accept delivery, owing to prices having fallen since the orders were placed.

Five French railways have been granted timber concessions in the Gabon (W.A.), through which they will draw their future supplies of sleepers.



Insurance.

EAST AND WEST.



General Assurance Society, Ltd., Ajmer.

The Directors of this Company in the Report for the year ending 31st March 1921 state that the Society continues to make very satisfactory progress in spite of the adverse conditions prevailing throughout the world.

New Business.—During the period 1605 proposals for assurance, aggregating to an amount of Rs. 2,509,750 were received, and of these 1,157 resulted into Policies assuring the sum of Rs. 17,53,750 being an increase of Rs. 1,28,918 on the previous year.

Premium Income.—The annual premium on New Policies, effected amounted to Rs. 90,351-14-0, the total premium income amounted to Rs. 2,66,365-4-5 being an increase of Rs. 65,565-6-5 over the previous year.

Income and Expenditure.—The Gross Income from all sources amounted to Rs. 2,92,627-7-11 being an increase of Rs. 68,723-10-7 over the gross income of the previous year. The total outgo including claims, cost of Establishment, Commission, Surrenders, Re-assurance Premiums and income-tax, etc., amounted to Rs. 1,85,802-0-7 leaving a balance on the year's account of Rs. 1,06,825-7-4. Out of the balance, the sum of Rs. 11,592 is transferred to Investment Reserve Fund and Rs. 482-4-2 to Building Depreciation Fund and Rs. 295-8-1 to Furniture and Books leaving a net

addition to the Life Assurance Funds of Rs.94,455-11-1, i. e., the largest increase in any one year.

Interest.—The average rate of interest earned on the mean Fund of the Society was 6.03%, inclusive of interest earned on the paid-up Capital and of the Investment Reserve Fund of the Society.

Valuation Report as at 31st March 1918.—This was as you know returned at the instance of the Government Actuary, to our Consulting Actuary in London, for making full provisions against the depreciation in Government and other securities and having now received duly altered a copy thereof is enclosed herewith for your information. The Directors have also resolved to have 3rd Valuation prepared for the last three years, i. e., ended with 31-3-21 instead of the quinquennial period ending with 31-3-23 and after having obtained the necessary sanction of the Government of India have placed the work in the hands of Mr. G. S. Marathey, M.A. (Bom.), A.I.A. (London), Actuary, Poona, and we expect to get a favourable report from him very soon.

Claims.—By the death of 34 Policy holders including one Children Endowment claims amounting to Rs. 39,350-4-0 have arisen. Six Children Endowment and 27 Life Policies amounting to Rs. 25,600 matured.

The total number of policies in force on the books of the Society is 3,709, assuring the sum of Rs. 51,82,369-10-0 or an increase of Rs. 9,45,736-10-0 on the previous year.

The Spinning of High Counts.

Most of the yarn produced in Indian mills is of lower counts because Indian cotton is more suitable for that purpose. But every year the mills produce a large amount of cotton of counts above 40, and this production is recorded. The following are the totals for British India for the years mentioned:—

Quantity in pounds of yarn produced in Indian

Cotton Mills.

Counts above 40.

	lb.
1914-15	2,213,277
1915-16	1,960,240
1916-17	4,461,415
1917-18	5,747,792
1918-19	4,502,670
1919-20	3,542,137
1920-21	2,067,137

Moreover the Government of Madras and other Indian Governments have made special efforts to encourage the production of high counts of cotton by fostering the cultivation of long staple cottons like the improved Karunganni, Cambodia, and Punjab American, which are suitable for spinning fine yarns.

The following is the record of yarn of high counts spun in Madras Presidency during 1920-21:—

Mill	Count	Quantity in lb.
Madura mill	54's	4,715
Do	50's	4,069
Do	44's	504,165
Do	42's	121,275

Total 634,224

Cotton mill, Ambasamudram 44's 21,669

Do Tuticorin ..	44's	4,780
Do do ..	42's	2,828

Total 7,608

Coimbatore mill .. 50's 65

Grand Total over 40's in the whole Presidency 663,566

The German Metal Federation has increased the quota of sulphate of copper released for export during March and April to 75 per cent of the total production.

The Mysore Economic Journal

A Monthly Periodical devoted to the Discussion
of all Economic Topics of Interest

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No. 2

Price Stability.

Recently Professor Irving Fisher of Yale University lecturing at the London School of Economics on "Business Depression and the Instability of Money" urged the need for stabilization. Politically the countries of the world require stable Governments and a stable state of peace. Economically they need stable trade, finance and industry and a stable standard for the contracts by which that trade, finance and industry may be conducted. The first step towards stabilization is to stop inflation defined as "an increase in the means of payment beyond the needs of business." But the mere stopping of inflation is only a part of the problem of monetary stability. Deflation must be stopped as well. Inflation and deflation are twin evils and not antidotes one of the other, for a stable price level can exist only when both inflation and deflation are absent.

During the war the United States gold dollar lost half its purchasing power while in the rest of the world, which adopted paper currencies, the purchasing power of money shrank still more. On the other hand, in the course of the last year deflation has taken place in most countries and the purchasing power of money in the United States has been raised half way to its pre-war level. The gold dollar has fluctuated as really if not as much as the paper currencies of other countries. This recent rapid deflation was a false remedy for the inflation of the war. For nearly two years public opinion has been victimised by the idea of returning to pre-war standards. Deflation, however, has but brought new troubles of its own by varying the obligations of existing contracts.

In the case of Continental Europe, Professor Fisher pointed to the impossibility of returning to the old par, a process which would multiply the burden of debts, and bring the people and

the governments alike to bankruptcy, and gives it as his opinion that the currencies of Europe, excluding the £ sterling, should be stabilized at greatly reduced valuations as compared with pre-war values.

In conclusion Professor Irving Fisher urged that an international committee of experts under the League of Nations be appointed, specifically charged with the responsibility of studying the problem of stability of price levels and recommending the best solution. Generally speaking, his own suggestions were:—

- (1) Disarmament, the balancing of budgets, the cessation of inflation and in some cases slight deflation.
- (2) Determination by each country of the gold content of its monetary unit.
- (3) The establishment of the gold exchange standard system.
- (4) The State banks, by international agreement, to recognize the obligation of regulating rates of interest promptly in such a way as never greatly to upset the level of prices and to upset business.
- (5) Stabilization of the metallic base, either by the control of the output of gold or preferably by adjusting the weight of the unit of value in accordance with the deviation of an accepted index number from par.

These suggestions deserve earnest consideration.

Asbestos occurs over wide areas in the Transvaal, Cape Province and Rhodesia and numerous fresh discoveries have been recorded during the past few months. Output during the first half of the year showed material expansion, but a falling off in demand is reported during the past three months and operations have been temporarily curtailed.

Water-Power in the British Empire.

The Water-Power Committee of the Conjoint Board of Scientific Societies has issued a final report, thereby bringing its full and valuable inquiries to a termination. The Committee was appointed four years ago to ascertain the amount and distribution of water-power in the Empire, including the United Kingdom. A preliminary report was presented in July, 1918. This was followed by another report in March, 1919. All interested in this important subject will be glad to learn that it is hoped to publish shortly a combined edition of these three excellent reports.

In the final report, the information received by the Committee since the publication of the second, is summarized.

The water-power resources of the United Kingdom have been investigated by a Board of Trade Committee, which issued its first interim report in 1919. At this stage that Committee had carried out preliminary investigations of nine of the more promising sites in Scotland, of the more hopeful areas in North Wales, of the English Lake District, and of typical English rivers. "By far the greater part of the water-power of the United Kingdom is," it is mentioned, "situated in Scotland, and from the nine sites examined by the Committee, some 183,000 continuous horse-power is available. This is only a fraction of the total water-power in the country, and it would appear probable, that the possible output is well over 1,000,000 horse-power, of which a considerable proportion is commonly feasible."

With regard to India, the second report of the Conjoint Board Committee contained certain recommendations as to training in hydro-electric engineering. The Committee notes with satisfaction that the Government of India have, as a preliminary measure, given instructions for a course of lectures in the major engineering colleges in the control of the Bombay, Madras, Bengal, and U. P. Governments, by an expert in hydro-electric engineering. "The development of Indian water-powers would appear" says the Committee, "to offer a most promising field to British manufacturers, and one in which some initial sacrifice would be amply repaid."

The Committee concludes its review of the present position as regards investigation throughout the Empire, as follows:—"It will be seen that in Great Britain, India, Canada, New Zealand, Tasmania, and some portions of

Australia, more or less adequate steps are being taken by various Governments, and that definite preliminary steps have been taken in the Union of South Africa, in British East Africa, in Ceylon, in British Guiana, and in Egypt. In the remaining countries of the Empire, nothing definite is being done, or appears to be projected although the potential water-power in New Guinea, Burma and West-Africa, for example, is known to be very large indeed; while where investigation work has been initiated, with the exception of Great Britain, Canada, New Zealand, and possibly India, the scope of the work does not appear to be in any way commensurate with the importance of the subject. Taking the Empire as a whole, no attempt is being made to ascertain the total resources, to secure any uniformity in methods of investigation and recording of data, to encourage such investigations as are being made, or to collect the information as it becomes available at a central bureau. At present, not even an approximately complete inventory exists, much less the practical and commercial information that would assist development of this important national resource."

The Committee supplements the facts it has previously given about the more active development in other countries. For instance, it is estimated that Brazil has available at least 26,000,000 h.p., of which some 320,000 h.p. is developed. Iceland's water-power is computed to be at a minimum 4,000,000 h.p., and the Norwegian Iceland Company proposes to erect six power stations capable of generating slightly over 1,000,000 h.p., for seven months of the year, and 700,000 h.p. for the remaining five months. In Japan the works completed or in progress, total over 1,000,000 h.p. How unfavourably our position in this respect compares with that of our competitors, is shown by the following instructive table:—

The Committee again calls attention to the urgent need of an Imperial Water-Power Board, "with extensive powers to carry out a comprehensive policy for stimulating, co-ordinating and where necessary, assisting such developments throughout the Empire." The headquarters should be in London, the Board to include a representative of each of the Dominions, and dependencies. Would not the Committee itself form a suitable nucleus for such a Board? The Committee also recommends that

an Imperial Water-Power Conference be held in the capital of the Empire at an early date.

The report is signed by the Chairman of the

Committee, Sir Dugald Clerk, K.B.E., F.R.S., and the Secretary, Professor A. H. Gibson, D.Sc., M.Inst.C.E.

	Hydraulic Horse-power		Per cent of available now developed.
	Available	Developed	
<i>Europe</i> : Germany, Italy, Switzerland, Spain, Sweden, Austria-Hungary, France, and Norway	47,300,000	8,450,000	18·0
<i>United States</i>	32,000,000	6,500,000	20·3
<i>British Empire</i>	60,000,000	3,000,000	5·0

Glue Factory for Madras.

The following order has been issued by the Madras Government:—

The Department of Industries has for some time been engaged in experiments in the manufacture of glue. The experiments originated in certain chemical discoveries made by Mr. K. C. Srinivasan until lately Chemical Assistant in the department. Messrs. Beardsell & Co. agreed to undertake the next stage of the experiment, *viz.*, that of actual manufacture on a small commercial scale, management by private firms at this stage being the method advocated by the Industrial Commission. The firm took charge of the factory in August 1920 and has been actually producing glue of good quality. The firm have now, however, expressed their inability to continue the experiment and their wish to withdraw from the business altogether. The Government accordingly took charge of the factory on the 31st August 1921.

The Director of Industries submits proposals for the future working of the factory.

His proposals are—

(1) to pay Messrs. Beardsell & Co. a sum of Rs. 8,594—10—6 on account of cost of machinery, books, raw materials, and sundries taken over from them;

(2) to pay Rs. 6,270—4—0 to the Public Works Workshops on account of machinery supplied to the factory for which payment has not been made by Messrs. Beardsell & Co.;

(3) to incur an expenditure not exceeding Rs. 3,000 on repairs to the factory and on installation of a vertical screw press;

(4) to employ Mr. V. S. Chinnaswami Ayyangar on a salary of Rs. 300 per mensem with effect from 1st October 1921;

(5) to transfer Mr. Wariar, a Government scholarship-holder in the Indian Institute of Science, Bangalore, to the factory;

(6) to appoint Mr. K. C. Srinivasan as a consulting chemist, and to pay him a conveyance allowance of Rs. 50 per mensem;

(7) to employ four watchmen on a salary of Rs. 17—8—0 per mensem, two of them being for only three months;

(8) to employ a storekeeper on a salary of Rs. 50 per mensem a fortnight before the factory commences work on a commercial scale; and

(9) to incur an expenditure of Rs. 11,060 on raw materials and labour for four months from 1st December 1921, the date on which the manufacture on commercial scale will begin.

These proposals are sanctioned with the remark that the Auditor-General has been addressed to permit Mr. K. C. Srinivasan to act as Consulting Chemist and to receive a conveyance allowance of Rs. 50 per mensem; his sanction will be communicated to the Director later. A sum of Rs. 500 asked for by the Director in paragraph 2 of his letter to meet unforeseen charges is also sanctioned.

The reappropriation proposed by the Director to meet the extra expenditure during the current year is also sanctioned.

British Export Credits.

Regulations have now been issued by the Export Credits Department concerning the application of the new scheme as embodied in the second part of the Trade Facilities Act. The details, together with examples illustrative of the working of the new provisions, are given below :

PART I.—GUARANTEEING OF DRAFTS.

1. In order to facilitate the resumption of the ordinary means whereby traders and others can obtain facilities from their Bankers to enable them to finance their export trade, the Government are prepared under the following conditions to entertain proposals to guarantee drafts drawn against shipments of goods exported from the United Kingdom. It is not proposed to apply the scheme in the case of shipments to Russia, nor at present, as regards the British Empire, to British India, Ceylon or Straits Settlements.

2. Guarantees will only be granted in respect of goods, other than arms and ammunition, wholly or partly produced or manufactured in the United Kingdom, including coal produced in the United Kingdom.

3. Applications for guarantees should be made by the exporter to the Export Credits Department, 73, Basinghall Street, London, E.C. 2, on forms which may be obtained from the Department. Applications should be submitted through the exporter's banker, and the banker's recommendation should be attached. For the convenience of exporters, the Department is prepared to receive and give a decision on applications in advance, a limit of time being stated within which the transaction will be completed.

4. The Department will fix and charge commissions to defray the expenses of the Department and to form a fund to meet losses ; and arrangements will have to be made for the taking of such steps as may be necessary to enforce payment by the importer.

5. The Department does not entertain applications to finance the carrying of stocks either in the United Kingdom or overseas, or applications in respect of goods to be shipped on consignment.

6. Guarantees will be given on two systems :—

A.—*General Credits*, i.e., credits which do not involve a separate reference to the Department in respect of each specific transaction.

B.—*Credits in respect of specific transactions.*

A.—*General Credits.*

7. (i) The Export Credits Department is prepared to consider applications, which must be submitted through the exporters' bankers, for credits up to specified amounts in respect of specified countries and for specified periods. Applications will only be entertained in respect of goods not yet shipped. The Department will decide in consultation with the Advisory Committee to the Department, having regard to the financial standing of the applicant and to the other circumstances of the case, the amount in respect of which it will be prepared to give guarantees.

(ii) The period of the credit should, if possible, not exceed six months, but renewals if necessary will be permitted, provided that the credit shall in no case exceed twelve months in all.

(iii) The exporter will be at liberty to enter into transactions abroad up to the amount fixed by the Department without further reference to the Department, and the Department will undertake to guarantee the bills for goods shipped. The guarantee will cover the full amount of the bills.

(iv) The Department will not require that security should be put up by the importer but in case of default will retain recourse against the exporter for $57\frac{1}{2}$ per cent of the ultimate loss.

The Department will also be prepared to consider cases where security is offered.

B.—*Credits in respect of Specific Transactions.*

8. (i) In these cases each specific transaction will have to be submitted to the Department. The guarantee may be given for 100 per cent of the total amount of the bill of exchange drawn against the shipment if the credit does not exceed 12 months, and to an extent not exceeding 85 per cent if the credit exceeds 12 months. The Export Credits Department will decide the proportion to be guaranteed in each case, taking into consideration relevant circumstances, such as current market values, the amount included as net profit, and the security offered by the importer.

(ii) The Department will not require the bills to be accepted before guaranteeing them, but

(a) *In cases where no security is to be deposited*, the Department will require that the bills should be accompanied by a letter of guarantee from the importer's bank, which

must be an approved bank, or by other satisfactory evidence, to the effect that they will be accepted.

(b) *In cases where security is to be deposited*, the Department will require a letter of guarantee as aforesaid from the importer's bank to the effect that the bills will be accepted and that the stipulated security will be deposited immediately upon the first presentation of the documents to the importer.

(iii) *Recourse in event of default by the importer*.—The Government will have a first charge on all proceeds of the bill, and, where the guarantee does not exceed 85 per cent.

(a) In cases where the importer puts up security deemed sufficient to cover the whole amount guaranteed, the Government will have no recourse against the exporter.

(b) In cases where the importer puts up security less than that deemed sufficient to cover the whole amount guaranteed, the Government will retain recourse against the exporter to the extent of half the difference between the amount guaranteed on the one hand, and on the other hand such amount, if any, as may be paid by the importer, plus the amount deemed to be covered by the security (or which the security eventually realizes, whichever is the greater).

(c) In cases where the importer puts up no security, the Government will retain recourse against the exporter to the extent of half the difference between the amount guaranteed on the one hand, and on the other hand such amount, if any, as may be paid by the importer.

Where the Government guarantees 100 per cent of the bill, recourse will be for 57½ per cent of the difference referred to under (b) and (c) above instead of 50 per cent.

(iv) *Security*.—

In the case of Foreign Countries, the following classes of securities will be considered for the purpose of the scheme:—

(a) Bonds issued in accordance with the International Credits Scheme of the League of Nations (so-called Ter Meulen Bonds).

(b) Deposit of currency coupled with an approved guarantee for the maintenance of the currency deposited to cover any decline in the rate of exchange. In certain cases the deposit of fixed amounts of currency might be accepted.

(c) Deposit of approved produce, approved Government securities, or an approved Banker's guarantee ensuring due payment in sterling at maturity.

(d) An undertaking by an approved British

Bank or British Accepting House that the purchaser will find at maturity currency of the buying country to an agreed amount.

(e) First charges on railways controlled by British Companies and under repair, equipment and reconstruction by them when the first charge is limited to the amount required to provide import of goods for those purposes.

In the case of the British Empire, the Department will consider such propositions for security as may be laid before them by the exporter, including deposit of approved produce, Government securities, or an approved banker's guarantee ensuring due payment in sterling at maturity.

The Export Credits Department will be prepared to consider other proposals as to security which may be put before them.

(v) The periods for which the bills to be guaranteed are drawn will be a matter of arrangement, and arrangements may also be made for renewals.

(vi) As soon as the bills have been finally liquidated and the liability of the Department is brought to an end, the security lodged will be returned to the importer. In the event of default, the Department may cause the necessary steps to be taken to realize the security or to hold the same as may be deemed expedient.

(vii) The Department will be at liberty to require the exporter to take such steps as the Department may think necessary to realize the security.

PART II.—PARTICIPATION WITH BRITISH BANKS, BANKING HOUSES, CREDIT ASSOCIATIONS, ETC.

1. In addition to the foregoing method of granting guarantees to individual exporters, His Majesty's Government are prepared under the following conditions to make arrangements with approved Banks, or Banking Houses, for Credit Associations for participation in any loss incurred by such Banks, Banking Houses, or Credit Associations in respect of transactions carried through by them for exporters in the United Kingdom.

2. His Majesty's Government in consideration of an agreed premium will take a share not exceeding 70 per cent of any loss incurred by Banks, etc., in respect of such transactions, provided that the transactions comply with the conditions as to the nature of goods prescribed in Part I. The Export Credits Department will arrange with any approved Bank, Banking House or Credit Association, which may apply for participation in this

scheme, the total amount in each case up to which this undertaking would be given.

3. Application should be made by exporters direct to the Bank, Banking House or Credit Association concerned.

Note.—The scheme at present in operation for the grant of advances in accordance with the conditions. dated 1st December, 1920, will remain in force until further notice.

EXAMPLES OF GENERAL CREDIT.

EXAMPLE I.

Where only one country is concerned.

An exporter applies to Export Credits Department through his bank for a general credit of £10,000 in respect of business to be done with importers in, say, Roumania.

Department after obtaining such information as may be required regarding exporter's financial standing agrees for the next six months to guarantee bills up to this amount, and fixes a commission. These bills must have as short a duration as possible, but renewals will be permitted, if necessary, provided that the credit shall in no case exceed twelve months in all. Each bill is guaranteed by the Government for the full amount of the bill, and can then be discounted in the ordinary manner by the exporter. At the end of the six months, the total of the bills guaranteed amounts to, say, £9,500 (assuming that the exporter has not been able to do the full amount of business anticipated). When the bills fall due, the Government has to make good any default which may occur but has recourse on the exporter for $57\frac{1}{2}$ per cent of the ultimate loss.

EXAMPLE II.

Where more than one country is concerned.

An exporter applies to Export Credits Department for a general credit of £10,000 in respect of business to be done with importers in Italy, the Serb-Croat-Slovene State and Austria, but is not prepared to specify beforehand how much of the credit will be required for business with each country. Export Credits Department when authorizing the credit fixes the commission which will be charged on the guaranteeing of bills for each country, as it may be necessary to charge a higher commission for one country than for another. Otherwise the procedure is as in Example I.

EXAMPLES OF WORKING OF PROVISIONS IN RELATION TO RECOURSE IN CASE OF CREDITS IN RESPECT OF SPECIFIC TRANSACTIONS.

EXAMPLE I.

Invoice value of goods, £1,000.

Period of credit exceeds 12 months.

Department guarantees $85\% = £850$.

Security deemed sufficient to cover the whole amount guaranteed, *i.e.*, £850.

The importer fails entirely and nothing is recovered from him. The security realizes £750. In this case the Department loses £100, but the Department has no recourse against the exporter.

EXAMPLE II.

Invoice value of goods, £1,000.

Period of credit does not exceed 12 months.

Department guarantees $100\% = £1,000$.

Security deemed sufficient to cover £500.

The importer fails to pay more than £100 and the security realizes £600 (*i.e.*, £100 more than it was deemed to be worth).

In this case the difference between the amount guaranteed (£1,000) and the amount paid by the importer (£100) plus the realized value of the security (£600) (total £700) is £300. The Department will have recourse against the exporter for $57\frac{1}{2}\%$ of this sum, *i.e.*, £172 10s.

EXAMPLE III.

Invoice value of goods, £1,000.

Period of credit exceeds 12 months.

Department guarantees $85\% = £850$.

Security deemed sufficient to cover £500.

The importer pays £300 and the security realizes £400 (*i.e.*, £100 less than it was deemed to be worth).

In this case the difference between the amount guaranteed (£850) and the amount paid by the importer (£300) plus the amount which the security was deemed sufficient to cover (£500) (total £800) is £50. The Department will therefore have recourse against the exporter for half this sum, *i.e.*, £25, only, although the total loss on the transaction is £150, *viz.*, the difference between the sum of £850 guaranteed and the amount paid by the importer (£300) plus the amount realized by the security (£400).

EXAMPLE IV.

Invoice value of goods, £1,000.

Period of credit exceeds 12 months.

Department guarantees 85% , *i.e.*, £850.

No security put up by importer.

The importer pays £750. The difference between the amount guaranteed (£850) and the amount paid by the importer (£750) is £100. The Department will therefore have recourse against the exporter for half this sum, *i.e.*, £50.

The Fredericia fair has been postponed until August 6-14, when it will be combined with the furniture exhibition.

Agricultural Bacteriology.

By Mrs. Dorothy Norris, M. Sc., Agricultural Bacteriologist to the Government of Madras.

One of the outstanding agricultural problems of the present day is the question of manures.

In Western countries, where mechanical power is rapidly replacing that of animals, supplies of natural manure are quickly diminishing, and the position is little better in this country, where much of the available farm-yard manure is utilized for fuel. China and Japan, on the other hand, appear to have realized the gravity of the situation, and conserve every scrap of human and animal excreta for use on the land.

In view of the foregoing, it is therefore of great interest to note research work on artificial manures carried out by Hutchinson and Richards at Rothamstead. So far as can be gauged at present, this work has opened up fresh possibilities, which may revolutionize the question of manuring in the near future, for its limitations should be very quickly disposed of now that the main problem appears to have been solved.

The process may be briefly described as follows:—

It consists of the bacterial fermentation of straw or other waste cellulose containing material, in the presence of a suitable nitrogenous compound.

The three essential factors are:—

1. Air supply,
2. Favourable temperature, and
3. Supply of suitable soluble nitrogen compounds.

The basic material is waste straw from any available source, and this is fermented aerobically.

The temperature rises during fermentation to 65° C. when the nitrogen supply is properly adjusted.

The reaction must be neutral, or only slightly alkaline. Hence ammonium sulphate alone as a source of nitrogen is no use, because the medium soon becomes acid.

Nitrogen must be present in an available or indirectly available form, and must not exceed a definite concentration, *e.g.*, if ammonium carbonate from decomposition of urea is used, and exceeds a certain limit, the breakdown changes cease until the concentration or the alkalinity has been reduced by loss

of nitrogen.

(a) If the straw is overloaded with nitrogen, loss occurs.

(b) If the exact amount is present, the straw rots without loss.

(c) If the straw is undersaturated, nitrogen, particularly in the form of Ammonia, can be picked up by the organism present.

The nitrogen appears to be stored in an organic or non-ammoniacal form.

The amount of nitrogen necessary varies from 0.70 to 0.75 pts. of nitrogen per 100 pts. straw, and a stabilized product is obtained, when rotting has proceeded to 40 %, which usually possesses a Nitrogen content of 2% calculated on the dry material. Urea and ammonium carbonate have been found the most suitable carriers of Nitrogen on a large scale, as they give a favourable reaction, they are however expensive. Cyanamide and ammonium sulphate may be used, but the latter must be supplemented by a base. Hence future work should be directed towards one provision of cheaper sources of nitrogen. In preparing the straw for fermentation it is best to heap it and sprinkle with water and leave for two days, when a further sprinkling may be given. When the interior is uniformly moist, the nitrogen may be applied in solution, or broadcasted and watered in. The resultant manure is a well disintegrated plastic material which closely resembles well rotted farmyard manure, and has so far given excellent results during trials.

At the same time, although it is possible in this way to make manure without the intervention of animals, the process can be made to utilize liquid manure as the source of nitrogen by allowing this to run through the straw under conditions which encourage the absorption of nitrogen compounds.

To turn from this to the many bacteriological problems connected with the soil itself, it is at once obvious that an immense field for work exists.

It is well known of course that the soil is inhabited by a great variety of micro-organisms, but we know very little about them either individually or in their relationship to growing plants, although soil fertility is greatly affected by their activities.

The usual methods of investigation are extremely artificial. The organism is picked out and studied on arbitrary media — that is to say it is brought under unnatural conditions the moment it is removed from its ordinary environment. The method has undoubtedly given useful results, but it is naturally open to defects. For one thing micro-organisms are considerably influenced by the medium in which they happen to find themselves, and may react totally differently according to the conditions in which they are placed. In fact this method, which may be termed the direct method, has proved very difficult, and has given good results only in the hands of a few workers, such as Winogradski, Beijerinck and others.

The more useful methods in use are indirect, and may be classified as follows:—

1. Use of various culture media arranged to bring out different groups of organisms. These are usually arranged to favour nitrification, ammonia production, nitrogen fixation and denitrification.

Here again the fundamental objection to the method is that the reactions are studied in medium very different from ordinary soil.

2. Counts of bacteria are made from soil suspensions suitably diluted on solid culture medium. This method is also faulty, because firstly no medium is known which will bring out all the soil organisms, so that the results are always low, and no medium even distantly resembles the soil in composition or structure, so that the flora obtained on the plates does not necessarily reflect the flora active in the soil.

3. Chemical determinations of the rate of progress of the various changes going on in the soil — absorption of oxygen, evolution of carbon dioxide, production of nitrate, etc.

If the second and third methods are used in conjunction, useful results may be obtained. For example, increase in bacterial numbers are so often associated with increased production of nitrate that one is justified in making the assumption that the phenomena are connected. This is not always the case, however, for example, when ammonia producing organisms are caused to multiply by partial sterilization of soil they do not increase the stock of ammonia and nitrate beyond a certain limiting amount. On the other hand, bacterial activity may show no sort of relationship with soil fertility because there is some other limiting factor other than nitrogen supply or rate of decomposition of plant residues.

4. The bacterial activity may on the surface appear to be directly related to soil fertility, but the relationship is accidental, both bacteria and plants being limited by the same factor, *e.g.*, by acid rain water in districts where there are chemical works.

The above outline indicates very briefly some of the principal methods by which soil bacteriological problems are attacked. Soil conditions have naturally a considerable effect on bacterial numbers and on flora generally, and in this country, with its vast extremes of climate, interesting results are certain to be obtained as soon as data have been collected.

Bacteria being living organisms, it is natural to suppose that their activity increases with the temperature up to a certain point. The amount of nitrate produced does show this increase, but bacterial numbers do not.

Increasing moisture supply also causes an increase in bacterial numbers, but this is not regular, and the rate of nitrate production rises to a maximum and then falls, consequent on the lack of air caused by the saturation of the soil. Excess of water will of course also wash out the resulting nitrate from the soil.

The effect of added organic matter is to increase the supplies of energy and therefore to increase bacterial numbers, although whether nitrate supplies will be increased depends on the proportion of nitrogen present in the added matter.

The effects of lime, calcium carbonate and magnesium carbonate have been studied, and the results are somewhat contradictory. Where the work has been done on acid soils, benefit has naturally been derived from neutralization. In neutral soils less concordant results have been obtained, some observers having observed detrimental effects from further addition of calcium carbonate while others have obtained beneficial results — bacterial number, ammonifying power and nitrifying power all being increased.

Magnesium carbonate may be more effective than calcium carbonate in small quantities but it is toxic in larger amounts. Lime in excess of a certain amount acts as a sterilizing agent.

ENEMIES OF BACTERIA IN THE SOIL.

I should like now to refer to a remark I made earlier, about partial sterilization of soils resulting in the increased production of ammonia producing organisms.

On the surface this would appear the direct opposite of what one should expect. As a matter of fact the apparent contradiction is

resolved when one realizes that the soil population does not by any means consist mainly of bacteria.

It was found that antiseptics in general first of all diminished the bacterial population, and then led to an enormous increase in numbers, and heat was shown to have the same effect.

Various chemical and physical explanations have been put forward to explain this, but do not wholly account for the facts.

Russel and Hutchinson consider that the soil population is complex, and that some of its numbers act detrimentally on the bacteria, which produce plant nutrients. These detrimental forms are more readily killed than the useful bacteria, with the result that the new population produces more ammonia and nitrate than the old one.

This view is still under dispute, as some investigations do not admit the presence of any biological factor in soils detrimental to bacteria.

I have gone into the question of soil bacteriology in some detail, in order to point out that almost the whole of the results so far have been obtained in temperate climates, thereby indicating how much is to be worked out in the tropics.

Another aspect of Agricultural Bacteriology is that of plant disease.

It is now becoming more and more generally realized that bacterial diseases of plants are as common as any other kind.

This branch of agricultural bacteriology is a very young one, the first mention of a bacterial disease being that of pear blight, about forty years ago. Since that announcement the subject has increased enormously, and it is now generally realized that the distribution of bacterial diseases of plants is universal. This is again a subject which has not received a great deal of attention in the tropics, and so, again, a large field for research awaits the attention of the investigator.

The commonest method of infection is probably through wounds in the plant either above or below ground. This indicates the care that should be taken in pruning, and also shows the part which insects may play in the dissemination of disease.

At the same time it is possible for bacteria to infect plants through their natural openings, such as nectaries, water pores and stomata.

Blossom blight of the pear is an example of the first, black rot of the cabbage of the second, and angular leaf spot of cotton is mainly stomatal.

Plant diseases have many features in com-

mon with those of animals. There is usually a latent period, or a period of incubation, during which the disease establishes itself in the plant before it is serious enough to be recognised as such by the damage it does. Like an animal disease it may be thrown off without doing much damage, if the plant is under more favourable conditions than the parasite. Everything depends on whether the parasite finds the initial conditions entirely suited to its needs or can by means of its metabolic processes quickly make them so, and thereby make rapid growth.

To illustrate the variation in the appearance of disease from time of infection, one can cite the various soft rots which usually appear in one or two days after inoculation, and Cobb's disease of sugar-cane and Stewart's disease of sweet corn, which may take one to two months. Of course as with animals, the greater the initial infection the shorter the time in which the plant succumbs.

I have already stated that diseases may be transmitted by insects—they can also be carried on the seed and thereby continue from one crop to the next, or they may be carried in the soil itself. Wind and water may also carry infection and possibly birds; the case against the insects molluscs and worms is complete.

I have no time to consider the prevalence and distribution of bacterial plant diseases, but I should just like to touch on the methods of control. I may say at once, in most cases these still remain to be worked out.

Where diseases are transmitted by seeds, bulbs or tubers and cuttings, the obvious remedy is to use these from free stock.

Some seeds will stand treatment in various antiseptics, but care has to be taken in the use of these, as germination may be injured. Germicidal sprays and control of insects by sprays will keep certain diseases in check, and disease resistant varieties should be grown wherever possible.

According to a Bukarest correspondent, Rumanian stocks of benzene are exhausted and the production of the next three months is already booked. As regards paraffin, large quantities have already been exported, and important orders from abroad are pouring in, engaging future production. Prices show the following increases:—Paraffin, export price from 0.90-1 leu per kg. in August to 1.80-2 lei; heavy benzene, from 1.90-2 lei per kg., to 5-6.50 lei; light benzene from 3-3.50 to 7-8 lei per kg.

The Indian Fiscal Commission.

By R. P. Sabnis, M. A. (Cantab.), Professor of History and Economics, New Poona Colleges.

We put forward no claim to the authority of an absolutist in the field of Economics to thunder out, like the followers of Ricardo, commandments the violation of which *shall* end in disaster. In common with the world we have not been equal to the task of gulping down that because free trade was good for England, *therefore* it was good for all. For industrially advanced England to give up free trade would be preparing to shroud herself in a winding sheet; for agricultural India to refuse to be protective would be to traverse the path of degradation till it reached total extinction.

There may be an immediate loss from the imposition of protective duties. But there are certain special cases in which the loss is, in course of time, more than made good by economic or political or social advantages. The protection of shipping is advocated for its political advantages, the protection of agriculture in a country like Germany, for its contribution to general social soundness. In India economic and social considerations have urged her economists to insist on protection to selected industries at least. It is the right royal case of infant industries the validity of which has been universally admitted.

Prof. Pigou, than whom no more determined free-trader exists, has to say this:—"The case for protection with a view to building up protective power is strong in any agricultural country which seems to possess natural advantages for manufacturing. In such a country the immediate loss arising from the check to the exchange of native produce for foreign manufactures may well be outweighed by the gain from the greater rapidity with which the home manufacturing power is developed. The 'crutches to teach the manufactures to walk,' as Colbert called protective duties, may teach them this so much earlier than they would have learnt it, if left to themselves, that the cost of the crutches is more than repaid."

Now, India is solely an agricultural country, and as such, her position is at present hopeless. The death agonies of the manufacturing industries which had earned her the fame of wondrous workmanship were witnessed with the same scientific cruelty as the torture of children in factories. One by one in a melan-

choly procession they disappeared. The results were disastrous. The profits of agriculture are small, and the relative importance of India in the world began to dwindle. The fatal diminishing returns are encountered. The soil is impoverished when larger and larger quantities of raw materials have to be raised to buy tawdry manufactures and to pay for services which India can largely avoid. The population became duller and more inert than ever before at the same time as the fall in the means of subsistence made it less strong and healthy. We wonder how the advocates of free trade for India are not ashamed of themselves when they set out to seek support for their case in the growth of foreign trade at the huge figures of which they point with exultation. These figures are utterly misleading. In the first place you must remember that wealth is not welfare. Supposing India imported Rs. 10,00,000 worth of wines and sent out wheat and rice in exchange, can any one pretend that India was more prosperous than when she had no foreign trade and when she was consuming all her wheat and rice? What is the use of buying felt hats and high class leather boots, fine woollens and cotton fabrics when their very wearers — not to speak of millions of their countrymen — are famishing? In view of the artificial pressure of the foreign domination the proportion of the soil under foodstuffs showed a tendency to decrease, and that under such articles as cotton required for foreign export a tendency to increase. Secondly, you must deduct the value of such products as tea and jute which are managed by Europeans and of the goods that are consumed by Europeans, and a still further deduction has to be made before we can arrive at the gains of Indian peasants or the mass of the population. Only a portion of the price of raw materials reaches the pockets of agriculturists, the money-lenders, the foreign export companies and their agents doing their best to rob him and succeeding in that easy enterprise. In these circumstances the growth of foreign trade is the measure of the degradation of India and not her prosperity. Perhaps the only consolation is that our case is without a precedent or a parallel in so far as the world has to show no example of a sacrifice both

of the present and the future. For there is that laudable sacrifice of the present for the future, and there can also be the short-sighted sacrifice of the future for the present.

We must not fail to enlighten those whose delight is in raising objections. Indian advocates of protection are alive to the fact that protection alone will not be sufficient. It will have to be supplemented by wider facilities for education both general and technical, free industry, abatement of social barriers, promotion of inventions by patents and trademarks. Allowance must also be made for the fact that there is something like a natural tendency in our country towards letting things take their own course. It is possible that our manufacturers will not be alert and adopt the latest improvements unless they have the fear of being beaten by foreign competitors. Refusing protection on the ground of this possibility would, however, be attaching too much importance to one's own preconceived notions of national character. After all, our manufacturers *have* built up the valuable cotton industry. The precaution of making the duties temporary is a sufficient guarantee against the possible evil of slackness. There is on the other hand no danger of diverting labour and capital into uneconomical channels, for surely labour cannot be more inefficient than it is at present in agriculture. The cutting off of imports would tend also to lessen exports which consist practically of raw materials, and this would be a material advantage which requires to be further reinforced by the levy of export duties on selected raw materials. Raw materials are the very life-breath of manufactures, and other countries cannot do without buying Indian raw materials. We have, therefore, every hope that the duties will fall on the foreign importers of these goods. The proceeds of these duties will go to increase the revenue, and will thus make room for a reduction of taxes such as that on salt which, Lord Morley said, must be reduced if there was to be any decency in taxation.

The case for protection in India is, therefore, strong with the strength of science and humanity.

Indeed human ingenuity has failed to contrive any greater iniquity than what rank free traders did in levying excise duties on the cotton manufactures of Indian mills equal to the customs duties levied on the goods of Lancashire. They did their best to throttle the infant, and if they failed, it was not their fault but the fault of its tenacious vitality.

If they had stayed their hand and encouraged Indian cotton industries both by protection and education, India would probably have been able to completely clothe herself to-day. But India is avenged upon her oppressors. The English manufacturers sank deep in sloth. There was no incentive to move onward. Even the most wretched specimens of cloth could be marketed in India — why trouble about other industries or be keen on making improvements? Having taken leave of resourcefulness English manufacturers have begun to clamour for protection; those who know economics have shown that the satisfaction of that unworthy clamour spells the ruin of England.

The question whether India can be self-sufficient is one mainly of academic importance. It has not yet come within the range of practical politics. If the past has to give any guidance for the future, we do not find any impracticability in the aspiration that India should become self-sufficient. She has a fertile soil on which she can raise any and every agricultural product. The contents of her mines, only partially discovered, are yet striking by their abundance. If she lacks good coal, conveniently situated, there are great possibilities of her being a home of industries worked by hydraulic and hydro-electric power. She is a continent in herself, and there would not be the slightest difficulty in finding as extensive a custom as any representative firm may desire.

Instead, therefore of indulging in idle speculation as to whether India will or will not be a self-sufficient nation in the course of a century or centuries, we proceed to point out the industries which ought immediately to get protection in one form or another. The cotton, the raw hides, the oil-seeds, at present exported deserve to become finished products by Indian workmanship. Paper and sugar can be prepared on a far more huge scale. The Industrial Commission has shown that a number of metallurgical industries can be made to grow up. The encouragement of these various industries, for the growth of which India is eminently fitted, both by protection and education is the duty of those who justify their subjection of India as a trust from God. The duties of a trustee are very onerous, and unless your aim in using that language is merely to hoodwink an easily confiding people, you cannot refuse to build up those industries with all the energy you have. It is an extremely shameful affair that a trustee should take care to exclude

his ward from progressing in the arts which the trustee has always professed to train him in, that he should actually fret about it if the ward by self-reliance learns them, that he should proceed to contrive operations calculated to make him a cripple or a never-do-well. Would it not be more manly for the trustee if he allowed every facility to the ward to grow to a robust and accomplished manhood, and yet preserved his own superiority, if any, by ceaseless exertion?

In spite of our enthusiasm for protection we cannot hide from ourselves the hard fact that it is very difficult to institute it so that *Indian* industries may thrive. In the present circumstances the levying of protective duties is itself fraught with danger. As soon as these will have been imposed, foreign (mostly British) capital and labour which may in their native land be enjoying all the benefits of unemployment are sure to fly to India, and it would be difficult to decide in that case whether we had fallen from the frying pan into the fire or jumped from the fire into the frying pan. The evil can be got rid of by levying equal excise duties on the products of those foreigners who may come to establish their industries in India. Exclusively Indian industries or industries, 70 % of the capital of which is subscribed by Indians, will be exempt from any excise duties. But if India were asked to choose between free trade as at present or protection without excise duties on the products of concerns conducted wholly or predominantly by foreigners, it would be placing before her alternatives as infamous as, Mr. G. B. Shaw has proved, English society offers to poverty-stricken good-looking women of England — honesty with the reward of the most degrading or killing drudgery, or prostitution with the command over every comfort and even luxury of life. Making labourers of Indians as on the tea-gardens of Assam would be worse than death in the eyes of moralists, a little short of salvation in the eyes of hedonists. For ourselves we cannot extract any merriment out of the idea of leaving large numbers of our countrymen to the tender mercies of British capitalists and have South Africans and Fisis in our midst as they *shall* spring up so long as the Government of India is not responsible to the Indian people, and so long as the people themselves have not fully recovered from the stupefying effects of a century of foreign domination.

The Commission ought, therefore, to insist on protection (if it is given at all) being re-

served exclusively for Indian and more than semi-Indian industries *i.e.*, for industries the whole or 70 % capital of which is subscribed by Indians. We can welcome capital offered in a spirit of co-operation, we must refuse it when it arrives with the design of exploitation.

We have to be on our guard in one more thing. We ought to levy protective duties with the essential safeguards pointed out above, but must never go in for using the tariff as an instrument in bargaining with other countries. As Dr. Marshall has said in speaking of a similar proposal for levying import duties with the object of giving English diplomatists something to bargain with when discussing foreign tariffs, "business would be disturbed by the opinion that such a duty was probable; and again by its actual imposition, and again by the probability that it would be removed, and again by its actual removal. It would disturb business in every way; and it would set particular classes of businessmen on influencing government, as it has done in other countries where diplomats are intrusted with a power of this kind." We may not think of testing by actual experiment the truth of this axiomatic statement.

We now come to pronounce our judgment on the schemes of so-called Imperial Preference. Quacks have come to be regarded as great statesmen. Imperial preference is the alluring, none-the-less fatal, legacy of a not very scrupulous demagogue. Chamberlain, when he had failed ignobly by engaging in one of the most unrighteous wars ever fought in history, had got to quiet the populace whose worst passions he had successfully roused. He fell back on this opiate to lull them. For the moment his scheme succeeded in wrecking the Balfour ministry. But a discovery was soon made that stooping to various subterfuges, such as misinterpreting statistics, substituting England for Great Britain and so on Chamberlain was able to misguide a number of people. In spite of the warnings of serious students of Economics, England seems eager to tread the path of ruin. And India is being called on by some of our Anglo-Indian or Indo-British (whatever the correct style of address may be) friends who have taken up the refrain and among whom Sir Roper Lethbridge has made himself responsible for the supply of barrellfuls of amusement at its own expense (*e.g.*, his boasted qualification for writing on the subject as a man charged with the duty of correcting examination papers in an Indian University, and

Mr. M. De P. Webb distinguished himself as a contemptibly crude imperialist who would cut up India, as he would a leg of mutton on his dinner-table, to gratify Great Britain by a sumptuous banquet. Every credit is due to the Government of India for having at least so far resolutely opposed this "foolishest of all foolish schemes."

We may be disposed to show preference to Great Britain, for Great Britain has some claim to our gratitude and more claim to our admiration as the land whose contribution to the world's culture is considerable, and as the land which produced Burke, Wilberforce, J. S. Mill, and G. H. Hardy. But to invite us to show preference to the goods of Britain's colonies is nothing less than monstrous. In the first place the colonists have made an elaborately farcical attempt to despise us as inferior to them. The unspeakable *Boors* (usually mis-spelt Boers — using the word in its comprehensive sense so as to include Englishmen and other Europeans over there) have placed themselves outside the pale of humanity by their dealings with the original inhabitants and with Indians. Secondly, it should not be for India to be called upon to fawn at their feet, "Delicious are your kicks; we shall be very specially pleased to provide you with nourishment that your legs may have greater strength to favour us with more of them." Unless the colonists mend their ways, the only thing that we can honourably do is to shun them as outcasts. Their goods ought to be the first to be shut out by prohibitory duties; they ought to be shut out of India as they shut us out of their land, for contact with them cannot fail to bring about our degradation.

Nothing more convincing has been written than the memorandum submitted to the House of Commons by Dr. Marshall in 1908 wherein he has clearly pointed out the futility and the danger of preferential schemes. The most dangerous thing about Imperial Preference is that "the gain which either side is invited to expect is greater than the loss which she is to incur; and yet as the scheme includes differential duties which are essentially wasteful, the aggregate material gain must be greater than the aggregate material loss. The schemes would be less dangerous if they started with the frank statement: 'Imperial unity is an ideal worth much material loss; let us consider how best to share this loss among us.' As it is, the schemes appear likely to breed more of disappointment and friction between England and her colonies

than of goodwill and the true spirit of imperial unity."

Whatever the beneficent results which, the tariff reformers wildly promise, will flow from imperial preference to the United Kingdom and the colonies may be, India will gain nothing and lose much by joining in the preference schemes. The trade with the colonies is insignificant, and the talk of preference in their case is practically a waste of breath. India is in a position to take from foreign countries only what the United Kingdom cannot supply and exports to them what the United Kingdom does not require. Now Great Britain cannot offer any reciprocal advantage to India without a substantial rise in the price either of raw materials on which some of her important industries depend or of food-stuffs. British manufacturers are too influential and too little of philanthropists to sit down with folded hands as Indian manufacturers while their interests were being sacrificed. If the price of food-stuffs were to be raised, there will be a howl of rage from the labouring population of Great Britain.

India must not give a moment's thought to schemes of Imperial Preference till she has fiscal autonomy, till her representatives have complete freedom to decide what goods to tax and not to tax, and then to decide the amount of taxation in the case of each particular commodity. She wants the greatest protection against British industries. But what tariff reformers promise her is that by Indian producers cheerfully bearing the sacrifice of a contracted market British manufacturers will reap the benefit by the overthrow of their competitors. That is not a very attractive position for India. Indian producers may reasonably be asked to bear a sacrifice only if their nation prospers in other ways by their sacrifice. To ask the poorest to bear a sacrifice for the richest member of a community is peculiarly mean. If India is to gain by levying duties on exports, she must have the power of affording protection to her own rising industries which would make use of the raw materials on the spot and effect a saving the immensity of which can only be imagined.

During the nine months ended September, Japanese imports amounted in value to 1,170,373,000 yen, a decrease of 845,000,000 yen on the same period of last year, and exports to 874,000,000 yen, a decrease of 748,630,000 yen.

Agriculture in the Punjab, 1919-20.

By "Rusticus".

Our review of the Report of the Agricultural Department in the Punjab for 1919-20 is distinctly belated but a brief notice of the work done in that Province during the year seems desirable before we commence to deal with the provincial reports for 1920-21. Mr. Jacob, who officiated as Director of Agriculture during the period under review, is as eminent as a mathematician and scientist as he is a tennis player and his bent of mind is perhaps rather too evident in his Report which is by no means easy reading. When will the writers of reports remember the readers to whom their reports are addressed? We wonder how many of those into whose hands this Report has fallen are capable of appreciating the argument in the following paragraph?

"It would savour too much of controversy to point out other ways in which the administration of agriculture should be radically altered if the best results are to be obtained. But, perhaps, I may be permitted to point out in this connexion that there would not be a man alive to-day if the phagocytes were to attack invading organisms, or the body cells were to proliferate only after the central nervous system had given its grudging assent to their doing so."

The most important crops of the Punjab are wheat, cotton and oilseeds, to which should perhaps be added sugarcane, in the area under which the Province stands second in India. So far as we understand Mr. Jacob, he holds that the experiments so far carried out by the Agricultural Department have not enabled it to pronounce definitely in regard to the true value of the work it has done on any of them. Again and again throughout the Report, we find it stated that it is quite useless to test a variety of wheat or cotton unless there is far more duplication of plots than has hitherto been the practice. Mr. Jacob says that there is an ever growing list of apparently conflicting evidence of the relative yields of Punjab 11, Pusa 12 and Punjab 8A wheats and includes the interpretation of this evidence in his list of the problems which await solution by the Punjab Agricultural Department. Again, as the Financial Commissioner points out, Mr. Jacob's comments on the failure of the well-known variety of Punjab American cotton, 4F, more especially in the Lower Jhelum and the Lower

Chenab Canal Colonies, have the appearance of shaken confidence in the type which the Department has been pressing in the past with such apparently good results. He justly says that, while it is possible that any other type of American cotton might have suffered less in the peculiar conditions of the year, as no other type of American cotton is grown on anything like the same scale, it is not possible to judge how another type might have behaved when subjected to a similar strain. There are, however, two comforting features of the position in regard to American cotton. The first is that the cultivators who grew both the American and indigenous varieties side by side in 1919-20 seemed to think that the relatively smaller yield of the former was just a chance occurrence and that the American was at bottom the better crop. The second is the premium commanded by the American variety which should go far to compensate for a smaller yield. On August 20th, 1920, Punjab American was quoted higher in the Bombay spot market than any other cotton, its price of Rs. 530 per khandi being Rs. 20 higher than that of Dholleras, the next on the list. It is worthy of mention that 4F gave the enormous yield of 34 maunds to the acre in Mesopotamia. With cotton as with wheat or any other crop, there can be no absolute finality in the selection of a type. The Agricultural Department must be ever striving to replace its selections by better ones and the conditions of the year under review show the necessity for further intensive work in regard to cotton. Mr. Milne, the economic Botanist, who should be the best judge of the merits of his own selections, is of opinion that 285, with the good points of which the Indian Cotton Committee were greatly impressed, is more drought resistant than 4F and it is curious that the Report does not mention whether any steps are being taken to substitute it for that variety. It is satisfactory to see that the advantages of sowing cotton in lines and of interculture, on which the Cotton Committee laid great stress, are beginning to be appreciated and that 30,000 acres were thus sown. The improvement of indigenous varieties is not being neglected and the Bhatla cotton which gave 11 maunds to the acre on the Hansi agricultural station against an average of 5 maunds for the Hissar

District seems very promising, though, as Mr. Jacob says, it is scarcely fair to compare the yield of any cotton which receives the careful treatment of an experimental farm with the general average of a district.

The Department was awaiting the Report of the Indian Sugar Committee before deciding how far its attention should be diverted from wheat, cotton or oilseeds to sugarcane. It may be remembered that the Committee has held that, whilst cane will remain of less importance than wheat or cotton in the Punjab, the area under it is so large as to justify much greater attention being given to it than in the past. The Agricultural Department can, therefore, now proceed with confidence in its tests of superior varieties from other Provinces and of the Coimbatore crosses as well as in spreading the improvements in cultivation recommended by the Committee.

One of the commonplaces of the Provincial agricultural reports as well as of those of the Cotton and Sugar Committees is that the introduction of superior varieties is not alone sufficient to ensure increased yields. It must be accompanied by improvements in cultivation and for this better implements are the first essential. Unfortunately the dead hand of the war still lies heavily on this branch of agricultural activity. The number of imported implements — ploughs, reapers, harrows and fodder cutters — sold by the Punjab Agricultural Department in 1919-20 was only 432 against 1863 in 1916-17. It is not surprising that this was so as the prices in the latter year were in most cases double those of the former. On the credit side must, however, be put the tremendous advance in the sale of the cheaper implements, such as bar harrows, drills and Lyallpur hoes manufactured by the Department itself. The sale of these in 1919-20 increased almost exactly threefold, the figures being 2380 against 778.

The accuracy of the crop forecasts is a question which has been much to the fore in recent years, for war conditions have brought home the desirability — in fact, the necessity — of striving to obtain correct figures of crop yields. It is a question which was exhaustively discussed at the meeting of the Board of Agriculture held at Pusa in December, 1920, which made various recommendations on which this is not the place for comment. But Mr. Jacob furnishes some striking evidence on the value — or, rather, the absence of it — which attaches to the forecasts as at present compiled. At the meeting of the Board, he stated that he doubted whether even

experts could estimate the outturn of a crop with an accuracy of ten per cent or less. Mr. Roberts, the Principal and Professor of Agriculture at the Lyallpur College, than whom there is no more expert agriculturist in India accepted the challenge and the matter was put to the proof on 32 fields at the Lyallpur agricultural station. Mr. Jacob had the double satisfaction of establishing the correctness of his propositions and of finding his own estimates nearer the mark than those of both Mr. Roberts and Mr. Faulkner, the Deputy Director of Agriculture, who also took part in the contest. His mean error in estimating was 27 per cent against 28 per cent for Mr. Faulkner and 38 per cent for Mr. Roberts. Mr. Faulkner was only within ten per cent in one case, Mr. Roberts in three and Mr. Jacob in eight. It has constantly been urged that the great reason for the inaccuracy of the Indian estimates of outturn is due to the ingrained pessimism of the reporting agencies. The experts are no better than the village officers or the cultivators in this respect, for Mr. Jacob says that the outturns of most fields were estimated at too low a figure. He adds that the conditions were in favour of accurate estimates as the past yields of the various plots were known as were also the manurial and other treatment and the number of waterings.

In their recent Report, the Indian Sugar Committee stated that they had been greatly impressed with the advantages not only in regard to distribution of water but also in ensuring economy in its use which would be secured by the adoption of a system under which water would be sold by volume. They held that it would be a great advantage both to the Government and the cultivators if the latter could be induced to take over their supplies at the outlets, to arrange all details of internal distribution between themselves, and to relieve the canal administration of all further responsibility of the great expense of recording the details of the irrigation and of making the final measurements and assessments. The recent formation of Irrigator's Associations in the Deccan seemed to them a hopeful step in this direction. It is interesting to find that the authorities in the Punjab have arrived independently at the same conclusion, and that an experiment is to be made in the formation of co-operative irrigation associations some of which will deal through their constituent societies with whole distributaries and some with one or more villages on particular distributaries. If all

the irrigators can be got to agree, the supply of water direct by the Irrigation Department to individual irrigators in the areas for which the unions are formed will cease and the Department will authorize the unions to sublet or sell the water. If the experiment shows that the system can be extended, the results will be far reaching, for no system is better calculated to remove the real or fancied grievances of the cultivators against the Irrigation Department.

This short notice should not conclude without a reference to the loss the Punjab Agricultural Department has sustained by the resignation of Mr. Roberts. Mr. Roberts is one of the greatest experts on cotton in India and whilst the credit for the evolution of 4F and the other varieties of American cotton is due to Mr. Milne, their rapid spread in the

Punjab is mainly owing to Mr. Roberts' energy and ability. In that and other ways, he has been a tower of strength to the Department. All who are interested in the future of long-staple cotton in India and more especially in the Punjab will be glad that in his new post of Manager of the British Cotton Growing Association's farm at Khanewal, his influence on it is bound to be great. He has the satisfaction of leaving the Lyallpur college a far more live institution than he found it. If our memory serves us correctly, about the time he took over charge of it, it was almost empty of students. Last year there were 268 applications for the 50 or so vacant places and of these 202 were from agriculturists. The results of the examinations showed an excellent class of students and teaching of a high standard.

British National Debt.

On March 31 last the dead weight debt of Great Britain amounted to 7,574 millions. Since then over 100 millions have been added through the issue of the Conversion Loan and about 53 millions by new borrowings so that on November 26, apart from any cancellations which have not been announced, the total was about 7,735 millions as compared with about 645 millions on August 1, 1914. If the latest estimates of revenue and expenditure are realized, about 26 millions of debt will be paid off out of surplus revenue for the period from November 27, 1921, to March 31, 1922, and allowing for redemptions through the operation of the sinking fund included in the Debt charge the amount of the dead weight debt at the end of March next will be roughly 7,685 millions. The actual details of the debt of Great Britain outstanding at the end of March last and the approximate position on November 26 are shown in the statement below:—

NATIONAL DEBT [000 omitted]

	March 31 1921 Actual	Nov. 26 1921 Approximate
	£	£
Floating Debt—		
Ways and Means Advances—		
By Bank of England ..	—	8,250
By Public Departments ..	154,489	184,408
Total ..	154,489	192,658

Treasury Bills	1,120,841	1,107,532
Total Floating Debt.	1,275,330	1,300,190
5-15 Year Treasury Bonds 1925-35	23,143	23,600
5½% Treasury Bonds, 1929 ..	—	223,000
4% Funding Loan, 1960-90 ..	405,347	403,900
4% Victory Bonds	347,359	345,500
Other debt	1,132,007	1,093,600
National Savings Certificates ..	284,996	290,400
4% War Loan, 1929-42 ..	67,025	66,700
5% War Loan, 1929-47 ..	1,928,734	1,906,200
3½% War Loan, 1925-28 ..	62,745	62,745
4% National War Bonds, 1927-29	163,001	159,600
5% " " 1922-29	1,249,766	1,042,200
4½% War Loan, 1925-45 ..	12,805	12,805
3½% Conversion Loan ..	—	266,100
Exchequer Bonds—		
5% due October 5, 1921 ..	71,913	—
5½% " February 1, 1922 ..	30,754	30,754
5% " April 1, 1922 ..	35,264	35,100
5½% " February 1, 1923-25	135,994	135,994
3% " January 28, 1930 ..	15,640	15,640
2½% and 2¾% Consols ..	301,191	301,100
Debts to Banks of England and Ireland (2½%)	13,646	13,646
Terminable Annuities ..	17,698	16,698
Total ..	7,574,358	7,745,000
Less Cancellations, etc. ..	—	10,000
Net Total ..	7,574,000	7,735,000
Debt, August 1, 1914 ..	645,000	645,000
Increase since August 1, 1914	6,929,000	7,090,000*

*About £102,000,000 of the increase since March 31, 1921, is due to the conversion of 5% National War Bonds into 3½% Conversion Loan in the proportion of from £160 to £163 of Loan for each £100 of Bonds.

Indian Land Revenue Policy—a Dilemma.

By S. Subbarama Iyer, M.A., Dip. Econ.

The amount and incidence of land revenue is a subject of acute controversy, one class of thinkers holding that it is so heavy that the ryots and cultivators are crushed under the burden, while another holding equally strongly that land is very lightly taxed and India suffers, on the whole, from under-taxation. In order to settle the question one way or the other it is necessary to have actual facts concerning the amount of total income from the soil and the proportion that land-tax bears to it. Two recent investigators, Dr. Slater in Madras and Mr. Jack in Bengal, incline towards the latter view basing it on actual statistics collected from different economic areas. According to Dr. Slater, the land revenue in ryotwari properties in Madras is about 5 per cent of the gross produce (*Some South Indian Villages*, p. 235 *et seq.*).

Such general calculations however conceal one important defect in the method of revenue assessment. The vagaries of subordinate officials and menials in the matter of classification of the soil and imposition of rates without their being properly checked by higher authorities are matters of common knowledge among the people who are so unorganized, and often illiterate, that redress is seldom sought or obtained from the superior officers.

Another objection, a more serious one, is that the income of ryots is treated differently for the purpose of assessment from that of the commercial and professional classes. In the latter case, the assessment is made *after* the income is earned and all incomes below Rs. 2,000 are exempt from any tax. No such exemption is made in the ryot's case, while the empirical rates arrived at by means of a good deal of statistical jugglery have no relation to the *actual* income earned in a particular year.

Several proposals have been made to bring about a drastic reform in the present land revenue policy. One is to adopt the Permanent Settlement. As the land-revenue still figures as the most important item in the Indian budget and public opinion in this country demands increasing governmental expenditure, it is only just that the Government should be permitted to tax the unearned increment from land.

Another proposal is to take the revenue from land so as to consist of two parts (1) as a levy of fixed percentage on the capital value

of land—minimum half a per cent, maximum 2 per cent; (2) as a tax on agricultural incomes levied at the rates for ordinary income-tax, excluding a minimum. The income from land should be taken at 4, 5 or 6 per cent (or whatever is the prevailing rate of interest) of its capital value and agricultural income should be added to other income for purposes both of right of exemption and rate of tax (A. Rangaswamy Iyengar, Editor, '*Swadesamitran*'). The proposer claims for the scheme the merit of automatically taxing the unearned increment in land-values and incomes from land owing to a rise in prices; a rise in prices will get taxed only when it has so far become permanent as to express itself in the value of land. A similar proposal is made by Mr. Jack in his "*Economic Life of a Bengal District*" in which he pleads for a universal income-tax which embraces every income and varies with the size of the family (p. 136-7).

The scheme is very attractive, but there is one supreme objection to it and well nigh insuperable difficulty. The holdings of the majority of ryots in the Madras Presidency, for instance, are "uneconomic" and presumably they are to be exempted from any tax. And with the persistence of the tendency towards division and subdivision of holdings due to equal partition of landed property among sons, such a state of things will perhaps be perpetuated in future. Large areas have to be exempted from the operation of the tax. It is doubtful whether the Government can afford to do so in view of the importance of land-tax as a source of revenue.

The proposal to tax the *value* of land instead of the *income* is of doubtful utility. The same evils are likely to be perpetuated in the one case as in the other. In any case it will not enable the Government to get out of the vicious circle caused by the inability of the average ryot to part with a portion of his income since his area is uneconomic. Indeed it may be said in truth that the difficulty of the average ryot in India is not to reconcile himself to an *increased* tax but to the payment of *any* tax.

The Government is in a dilemma. On the one side there is a demand for increased expenditure and on the other an outcry against any increase in land-revenue assessment. So

long as our Provincial Legislative Councils are controlled by landed interests as in Madras at present, the Government may be sure that it has little chance of getting increased revenue from land. There is also a strong economic argument against enhancement of land-revenue, for the recent rise in prices of agricultural products, on which basis alone any enhancement will have to be effected, has not increased the purchasing power of the vast majority of agricultural classes in this Presidency.

There is no objection, however, economic or moral, in levying an income-tax on agricultural incomes above a certain margin which may be fixed at a higher amount than in the case of the ordinary income-tax. The advantage is that the burden of increased taxation will rest on the shoulders of those best able to bear it, for it is a well-known

fact that several big landlords and zamindars have immensely gained by the recent rise in prices and have not scrupled to take full advantage of the economic tendencies of the last century to screw their tenants up and rack-rent them in one shape or other. Our 'land-lord' Council must pass this self-denying ordinance if it wants to co-operate with the Government. Moreover the Government must seek to increase its revenue, if at all, out of commercial and professional incomes and a sparing use of indirect taxation rather than by increasing the incidence of land-tax on its present basis. Now that the income from excise shows a decided fall, it is all the more important for the State to effect a radical and wise retrenchment without impairing the efficiency of its services. There is considerable scope for this measure of useful reform.

Consolidation of Holdings.

The following Order (No. 2821, Revenue, dated 16th December 1921) has been issued by the Madras Government:—In G. O. No. 2085, Revenue, dated 6th September 1919, the Government requested the Board of Revenue to issue instructions to the Special Settlement Officer, Trichinopoly, to try the experiment of consolidating fragmented agricultural holdings with the consent of the pattadars in selected villages of the Trichinopoly district during the course of re-settlement operations. The Special Settlement Officer reports that he made a genuine attempt to persuade the ryots to rearrange the holdings at the time of hearing objections to rough pattas but without success and that it is not practicable to carry out the experiment during the course of re-settlement operations. The Board of Revenue agrees with him.

The Government consider that so far as this Presidency is concerned the problem is beset with difficulties and that it is not capable of such an easy solution as might appear at first sight. The proposal runs contrary to the traditions and practices of the smaller holders of the land. There are again cases in which subdivision is inevitable, *e.g.*, where part of a holding is transferred or a joint holding is divided among the joint pattadars. Refusal to subdivide in such cases will result in hampering dealings in land and merely increase confusion between real and nominal

owners. Legislation in such matters is out of the question; and any attempt to discourage subdivision below a certain limit by the levy of a prohibitive fee or otherwise is likely to be resented. The Government consider that so long as subdivisions have to go on for one reason or another any attempt at consolidation of existing fragmented holdings is bound to fail and that it will serve no useful purpose to allow the time of Settlement Officers to be wasted over it. In these circumstances the Government accept the conclusions arrived at by the Settlement Officer which are supported by the Board of Revenue and direct that the experiment be discontinued. A pamphlet on the subject of the evils of fragmentation has already been published under the orders of the Government.

H. M. Consul at Damascus recently furnished a list of articles in demand in his district and asked for copies of catalogues issued by United Kingdom manufacturers of these goods. He now informs the Department of Overseas Trade that the response to his request was gratifying and adds to the list of goods, drapery, haberdashery, bed linen, etc., catalogues of which—if possible with price indications—will be useful to him in his efforts to stimulate a demand among local buyers. Such catalogues should be addressed direct to his Majesty's Consul, British Consulate, Damascus.

Labour in the F. M. States.

By A. P. Smith.

Labour in India has, of late years, become recalcitrant. No longer is the Indian labourer submissive to treatment that infringes his rights, though what his rights exactly are he has a very indefinite idea of. But he is gradually beginning to understand his importance as a factor in the prosperity of his employers. The Indian labourer, for many years, has remained satisfied with very meagre wages and in regard to housing accommodation, medical treatment, etc., he was not in any way particular. He suffered, uncomplainingly too, ill-treatment of sorts from especially his European employers and protested but little against his spoliation by greedy Kanganies. From causes which need not be particularized here, the Indian labourer, whether immigrant or local, has learnt to kick against the pricks which have harassed him for years and has in some cases become aggressive in demanding his rights. Differences between Labour and Capital have multiplied and it is becoming increasingly manifest that if peace and prosperity should in future characterize the relations between and the interests of both operatives and employers, their cordial co-operation together, without trespassing on each other's inalienable rights, is absolutely essential. These remarks are made with reference to the Annual Report on Immigration for 1920 to the Federated Malay States.

A perusal of the report shows that though in 1920 there was a decrease in the number of immigrants to the F. M. States by 6,213 attributable to many causes including adverse exchange, shortage of rice, high cost of living and a general increase in wages in India, as many as 78,855 assisted immigrants, *i.e.*, those assisted by the Immigration Fund, and 16,365 other immigrants, such as traders, and labourers and others who paid their own passages arrived in Penang, the port for disembarkation, and from there found their way to their various destination. The labourers landing at Singapore and Port Swettenham are not here mentioned. Of these labourers the vast majority are men; the females of over 10 years of age being only 20·16 per cent in proportion. This is regrettable as the disproportion leads to immorality and disease; and endeavours should be made to increase the number of women immigrants. It is unnecessary to dwell upon the methods of

recruiting which are now, more or less free of the abuses which formerly discredited the recruiting agencies and victimized the labourer; and it is satisfactory to know that all the Indian labour employed throughout the F. M. States is free-handed; free of debt, and free to leave the service of their employer on giving one month's notice, and free by compulsion from entering into any written contract to serve as a labourer. The Labour Code provides safeguards and gives protection to labour. During the year a General Labour Committee was formed to consider various questions connected with labour. The Committee's Report formulated some valuable suggestions which have served as a guide to employers, though the report has not been given the force of law. The Committee in their report dealt, *inter alia*, with wages, exchange, recruiting, co-operative estate shops, land settlement, care of mothers and infants, and the registration of Hindu marriages. Some progress, it is reported, has been made in giving effect to the suggestions and recommendations of the Committee; but some employers decline to co-operate in a real sense, through a fatal tendency to regard most labour problems from an individual or parochial standpoint. The acting Controller of Labour, F. M. S., considers this attitude on the part of employers as lamentable. He warns planters that there are difficult times ahead, and unless there is universal co-operation the country and the planting industries will suffer.

Towards the close of the year the failure and consequent slump in the rubber industry dislocated labour arrangements owing to many employers cancelling licenses to recruit in large numbers. This will lead inevitably to subsequent crimping and the inflation of wages. In the Controller's opinion "the failure of the rubber industry to make proper provision for the inevitable time of depression will be costly, and the effect can only be mitigated by immediate co-operation and strong efforts to conserve the labour in the country." Any loss of touch with recruiting areas will end in labour going elsewhere and consequent shortage.

In the Penang Labour Office, 98 complaints were registered, 8 from employers and the

balance mainly from Estate labourers. It is regrettable that complaints of personal assaults by employers and their agents numbered as many as 15. Planters must learn not to resort to personal force. It is not dignified and in most cases cowardly. Non-payment or late payment of wages numbered 19, refusal to discharge after due notice 25; wrongful dismissal 2, separation of families 7, and 35 were miscellaneous. Twenty-three of these complaints were found to be false. Employers when found in the wrong were fined; in one case the offender was fined 50 dollars for causing hurt, and another 450

dollars for failing to act up to the Labour Code in registering locally engaged labourers. The exigencies of space permit of no particular reference to conditions of steamer passages, educational facilities for children, the savings of immigrants, health and death statistics, etc. The perusal of the Controller's Report creates the impression that though the labourer in Malaya is not working and living under ideal conditions, that much is honestly being done to safeguard his interests. With the cordial co-operation of employers those interests would be permanently improved and rendered unassailable.

Prof. Jacks on Education.

A London correspondent writes to a contemporary:—The Tenth Annual Conference of Educational Associations opened in London with an inaugural lecture by Professor Jacks, the head of the Unitarian College at Oxford and the well-known editor of the "Hibbert Journal". The opening of the Conference coincides with the announcement that the Geddes Committee on the truncation of public expenditure may be expected in its report that is now in the hands of the Cabinet, to recommend a severe pruning of the expenditure in many departments of State, including the Department of Education over which Dr. Herbert Fisher presides. In his inaugural address, Professor Jacks said he looked forward confidently to a time when education, interpreted in a broader sense than any with which we were familiar to-day, would become the central concern of every civilized community. At present the dominant interests were economic and political, and the position of education was that of a subsidiary or satellite to these. There was a concurrence of signs that the fate of civilization depended at this moment on our being able to change the present order. In the coming order of society, or, at least, in the society for whose coming they could hopefully labour, education would not be a side-show or appanage of the State, but an equal partner in a community of interests. The school-master of to-day would be the statesmen of to-morrow. The best that was possible under existing conditions was not nearly good enough for a world threatened by moral disaster. So long as political and economic interests remained dominant, confusion and strife would remain the lot of mankind. The idea of a

State organized for the education of its members in the widest sense of the term was outlined and worked out in Plato's "Laws". There a constitution was outlined of which the outstanding feature was that the Minister of Education held the position of Prime Minister. Even that august personage, the Foreign Secretary, had under the constitution to play second fiddle to the Minister of Education. The latter was required to give the whole of his time to his proper function. He doubted if any of them could accept this ideal without modifications as a practical ideal for to-day. But if they could not claim that education should dominate everything else, they ought to claim that it should not be dominated by anything else, that it should have the status of an equal partner. It was only the poorest kind of education that would submit without inquiry to be the sport of the political vicissitudes and economic necessities of the moment. In the matter of education, he was a convinced Home Ruler. He asked whether it was inconceivable in an age which had seen the conversion of Lord Birkenhead, and of Mr. Austen Chamberlain to the idea of making Ireland a Free State within the British Empire, that responsible statesman might one day be persuaded to entertain the proposal of giving Dominion status to Education. As a fervent believer in the League of Nations, Principal Jacks said that he held the view that the real growing point for the League lay in the world of education and not in the world of politics or diplomacy. The moment education was freed from political entanglement, its international affinities would at once begin to assert themselves.

Industries in Mysore, 1919-20.

By " Viator ".

Mr. Rangaswamy Iyengar's Report on the working of the Industries and Commerce Department in Mysore for 1919-20 would have been of greater interest if he had endeavoured to place before himself and his readers the objects at which his Department is aiming and the measure of success it has so far achieved in reaching them. It is to far too great an extent a record of isolated activities and no attempt is made to correlate them either to each other or to the general industrial development of the State. The Government review touches the weak spot when it points out that the work turned out during the year was confined for the most part to carrying on the Government concerns and improving their commercial possibilities. This no doubt was very useful work but it should be far from being the whole work of the Department. The Government criticism seems to us entirely just. "The work in the districts should receive greater attention and the State aided concerns and installations should receive greater assistance and support from the Department in future. Investigations have to be pursued into questions vitally connected with the development of larger industries and greater activity should be shown in the work of the Commerce Section so as to make it really useful to the public."

There is an old English proverb, "Who drives fat oxen should himself be fat." One of the functions of an Industries Department is the demonstration of the commercial soundness of new enterprises. In order to do this, it should be acquainted with at least the elements of commercial methods. In other words before setting out to teach others, it should itself have learnt. Yet we read in regard to the work of the Central Industrial Workshop that "it is considered very necessary that we should standardise the work in the foundry section." And, again, in regard to the Government metal factory, that "the experience of the last year showed us that if the factory was to be run on profitable lines it was imperative that its work should be standardised." The Industries Department had been in existence for eight years when this was written and it can only be regarded as extraordinary that the advantages of standardisation should have taken so long to discover. The difference it makes in out-

turn is shown by the figures for the metal factory. From January to June, 1919, the value of the work done was Rs. 30,362. From January to June, 1920, it was Rs. 76,508. Of the enterprises directly managed by the Department the soap factory appears the most promising. The total value of its products amounted to Rs. 1.09 lakhs of which about two-thirds were contributed by toilet soap and the remainder by washing soaps. The writer can testify from personal experience to the excellent quality of the former.

The Art Workshop has now 88 workmen and 52 boys under training. Mr. Rangaswamy Iyengar laments that it is not better appreciated but it is surely a rhetorical exaggeration to assert that Government could *by a stroke of the pen* find employment for a thousand workers. The goods turned out are undoubtedly of excellent quality and it is not surprising that the workshop received an order for the supply of furniture to the Viceregal Camp and also one for the supply of a casket for a presentation address to the Viceroy.

The only important experimental work done was on the preparation of silk to make it fit for the loom. The introduction of power looms for silk weaving has made it difficult for hand labour to carry out the preliminary operations on a sufficiently large scale. Simple machines had therefore to be designed for reeling and winding and twisting. The handwinding machine appears to be quite a success and has been adapted to work by electric power. It can produce twenty pounds of silk a day. None of the three sugarcane installations in the charge of the Department worked at all, the reason given being that all the cane available in the locality was utilized for seedlings. The Indian Sugar Committee holds that the results obtained by these installations would have been different had the matter been regarded as agricultural rather than industrial and had there been a preliminary investigation by the Agricultural Department of the possibilities of the localities in which the installations were located.

Of investigations into possible new industries, the most interesting was that into the possibilities of manufacturing porcelain. There are large deposits of kaolin near Bangalore

and Mr. Vyasa Rao, the Industrial Geologist, was deputed to the Calcutta Pottery Works to make experiments under factory conditions with this raw material in order to determine whether porcelain of good quality could be made. The experiments proved promising and a scheme for the manufacture of porcelain has been submitted to the Government. The investigations into the possibility of utilizing the slates of the Chitaldrug district as substitutes for Cuddapah slabs did not give such satisfactory results. A close examination of several quarries in the district showed that they only yielded crude slabs of uneven surface and small dimensions. The investigations were, therefore, discontinued as it was clear that quarrying could not prove a sound commercial proposition. Another failure though for quite a different reason was encountered in the leather work. A scheme for the manufacture of 1000 chamois skins to meet the orders of the Railway Board was approved but before the work was finished the Leather Expert succumbed to the temptation of the more lucrative post in Calcutta. The work was continued by a locally trained man but only 300 good skins were obtained out of a total of 633 skins split. The question of securing another expert is under consideration and it is to be hoped that if a suitable man is found arrangements will be made to keep him.

The development of home industries proceeded but slowly. The value of the goods sold in Bangalore was only Rs. 2,552 and in Mysore Rs. 921, in each case about double the value of the raw material supplied. What is wanted, according to Mr. Rangaswamy Iyengar, is better provision for marketing facilities for artisans, a supply of raw material to these workers and the starting of an auxiliary factory in places where groups of workers are available. A sum of Rs. 25,000 has been sanctioned by Government for operations on these lines and more rapid progress may therefore be expected with some confidence.

At first sight it would seem that the assistance given by the Department to private enterprise mainly consisted in the administration of takavi loans, more especially in special efforts to collect arrears. Closer examination shows that this impression is not entirely justified for Mr. Rangaswamy Iyengar gives a list of 176 small power plants which have been installed all over the State for some 30 purposes of a very miscellaneous character. 51 of these are pumping plants, 25 rice mills and 23 flour mills. Others which

find a place in the list are a toy works, a photographic studio, a match factory, a sodium carbonate factory, a sawing machine and a button factory. We presume, though it is not definitely stated in the Report that it is so, that these installations were all erected by the Department and that it gives advice in regard to their running and assistance in repairs. 36 installations were taken up for erection during the year of which 20 were completed and handed over. Amongst the latter were cotton gins at Chitaldrug and Nanjangud, a rice mill at Challakere and tile factories at Kolar and Sagar.

The largest State-aided institution in Mysore is the Mysore Tannery in which the Government own capital to the extent of Rs. 53,000. One-third of the Directors are nominated by Government and the accounts are audited by a Government official. A twenty-five per cent dividend in a year which was none too good for the leather trade is sufficient evidence of the way in which the tannery is working. None of the other State-aided institutions had anything like this record. To the Mysore Pharmaceuticals, Limited, the Government have lent Rs. 25,000, in return for which it has the right to nominate two directors. The sales to the end of 1919 amounted to Rs. 85,000 but no mention is made of the important question of profits. It is said that the Company labours under certain disadvantages in regard to the supply of alcohol and other materials. There is ample scope for expansion but it is the opinion of those best qualified to judge that no appreciable improvement is possible unless the concern is considerably enlarged and the shareholders take more interest in it. The management of the Thirthahalli tile factory was only taken over by the Department in February, 1919, since when expenditure has greatly exceeded receipts. The hosiery factory manufactured goods to the value of Rs. 36,327 but sales amounted to Rs. 30,813 only. The total value of the work turned out by the Art Litho Press was about Rs. 10,600. Further details of the working of these institutions should have been given. In the absence of proper profit and loss accounts, which might well have been appended to the Report for all of them, it is impossible to judge either their present financial position or their future prospects. We can only repeat that, if the Department is successfully to pioneer commercial enterprises, it must follow commercial methods.

For the rest, Mr. Rangaswamy Iyengar

mentions the investigations into the possibilities of starting large concerns, such as a sugar factory, a paper pulp factory, and a saw mill but says nothing about the results of these investigations except that the question what facilities Government should give to promote the successful flotation of such companies is under consideration. He also mentions the formation by the Mysore Development Syndicate of an asbestos factory

and an essential oil factory and the flotation of a cotton mill with a capital of Rs. 40 lakhs which was entirely subscribed within the State. Whether the Industries Department was in any way connected with these schemes he does not tell us. It is to be hoped that in future reports he will be much more explicit than he has been in this regarding the exact part his Department is playing in the industrial development of Mysore.

Cost of Radium.

One ounce avoirdupois or thirty grammes of radium metal is worth nearly a million pounds. Why is radium so dear?

In the first place, a market for it exists. The demand comes from doctors for medical treatment, from physicists for research, and from industry where knowledge and experience are slowly marking out spheres of usefulness for radio-active substances. The cotton industry shows possibilities for the use of radium, and perhaps agriculture too may in time find a method for its useful employment.

In the second place, it is a rare substance, and with its rareness associated an exceedingly tedious, laborious, and costly process of extraction from its natural sources.

Uranium was the first radio-active metal discovered, and at the time of the finding of its property of emitting rays it was employed as now in the making of pigments. It has since been discovered that uranium X, an impurity, is the real source of the rays. Uranium is obtained from pitch blende, a mixed ore containing over 50 per cent of uranium oxide, and at the same time a metal called thorium, used in the manufacture of incandescent mantles, is also extracted.

In the Curies' investigation of the radio-active properties of pitch blende it was found that by chemical means a residue could be prepared from the mineral which was much more strongly radio-active than uranium. This led to the discovery of radium, and thus until time of the war Joachimsthal in Austria (now in Czecho Slovakia), where pitch blende is most plentiful provided the main supply of radium to the world. It is interesting to note that although this ore is one of the richest known, radium is present in it in a proportion of considerably less than one part in a million.

Now, however, except for some rather mysterious supplies which are occasionally offered from Germany, the United States of America is the only country producing relatively large quantities of radium.

The following Order [No. 1761, Law (Education), dated 7th December 1921] has been issued by the Madras Government:—

In Circular Memorandum No. 1076 A-1, dated the 22nd March 1920, the Government invited the opinions of local bodies and other agencies engaged in the field of education on the question of the abolition of fees in elementary schools. Most of the local bodies consulted have expressed themselves in favour of the proposal as such a measure would tend to the greater spread of elementary education among the people especially among the poor communities. The Government have given their careful consideration to the various opinions received and also to the possible effect of the passing of the Madras Elementary Education Act. They are now pleased to empower local bodies to abolish, at their discretion, fees in elementary schools under their management, subject, however, to the condition that the usual contribution from the general revenues of a local body to the elementary education fund under its control is raised by an amount equal to the fee income foregone.

2. The existing practice in regard to the levy of fees in Government elementary schools and in those under private management will continue unaltered.

It is anticipated in Holland that the price of butter will fall considerably in the 1921 season, because Denmark is already under-quoting the Dutch product, and Britain is importing from her Dominions.

Allied Debts in the U.S.A.

Arrangements for the funding of the obligations of foreign Governments held by the United States Treasury being in the course of formulation, the statement on page 3 of debts incurred during the war and owed to the United States is of interest. It has long been apparent that these debts would have to be put upon a common basis and a definite scheme entered upon concerning their repayment.

As will be seen from the table, the indebtedness of the former Allied countries arises chiefly in respect of advances under various Liberty Bond Acts. Under this head France owes nearly 2,951 million dollars, Great Britain 4,166 million and Italy 1,648 million, the total of 9,435 million for the three countries accounting for a very large proportion of the total debt. There is, however, an additional obligation from France of 400 million dollars on account of the sale to the French Government of surplus war materials owned by the United States, and Belgium owes 27½ million on the same account. Other debts due under this head, together with the obligations received from the American Relief Administration and those held by the United States Grain Corporation, have been incurred mainly by the necessitous countries of Central Europe.

The details as to interest in respect of

debt due to the United States Government are of particular importance in view of the statement of Sir Robert Horne in the House of Commons on November 9 that it is the intention of the British Government to undertake payment of interest on this debt in the next financial year. Interest accrued and unpaid up to the end of May last on Great Britain's debt of 4,166 million dollars amounted to just over 407 millions. The interest due in respect of the last six months increases our liability, and brings our total debt to the United States at the present time to about 4,677 million dollars. Assuming that interest is not to be paid on the postponed interest, and that no payments are made in the meantime, the arrears of interest in May next will be 615 million and the total debt 4,781 million dollars. The liability of Great Britain for interest payments in 1922-23 will therefore depend on arrangements to be made with the United States Treasury. Sir Robert Horne has stated that it will amount each half-year to £25,000,000 at present rates of exchange, on the assumption that the postponed interest is in some way funded with the debt and carries no immediate interest liability. On the other hand, if this country is required to pay interest at the rate of 5 per cent per annum on the total debt, the liability at present rates of exchange will work out at nearly £60,000,000 per annum.

Photo-Sculpture.

Mr. H. M. Edmunds, of Moulescombe-place, Brighton, has after two years' experimenting discovered the method of "photo-sculpture," by means of which, carving in greater or less relief can be made from a solid object by use of the camera.

At the moment, it is perhaps too early to lay down with any certainty the applications of this original process, but the more its capabilities are reviewed the more possibilities does it present. There is nothing to prevent a photographer of ordinary skill, given the necessary combination of camera and projector, from making the photographic record, which is all that is required for the carving machine; and when once such a negative is made it can be sent away to the works where the graving machine is operated, and any number of direct replicas in relief can be made from it, to say

nothing of their reproduction by casting. The carving can be done either in relief or intaglio, at the will of the operator of the machine. As its name implies, photo-sculpture is a process by which it is possible to photograph a sitter or any suitable solid object in such a way that from that photograph a carving can be made in ivory, alabaster, wood, or other material.

It is a little difficult for the ordinary layman to grasp how these carvings can be produced, and to understand the theory of their production calls for a knowledge of mathematics. However, Mr. Edmunds has explained to me in as simple language as possible the technique of the invention. It was necessary to imagine an optical projector (magic lantern) constructed for use with a very long focus and well corrected lens and a powerful source of illumination. The inventor has used with success a

gas-filled incandescent lamp of about 1,500 candle power. In place of the ordinary lantern slide an accurately drawn spiral photograph on a sheet of plate glass is used. This spiral has a form like that of the groove of a gramophone record. The spiral is projected and focussed upon a plane surface at a distance of about 10 ft. from the projector lens. A camera is fixed to the side of the projector with the nodal points of its lens lying in the nodal plane of the projector lens. For all practical purposes it can be said that the optical axes of the camera and projector lenses are parallel, and that a line joining the centres of the two lenses is at right angles to these axes. A photographic plate put in the camera at right angles to the axis of the lens will photograph the spiral projected on the plane surface, and will do so without any distortion, provided both lenses are well corrected.

The broad principle by which the carving is effected is that by substituting any solid object of an irregular form for the plane surface, the distortions produced in the projected spiral give a record of the object, and so provide means by which the carving can be effected. The photographic negative obtained is carefully enlarged on to an opal glass, which is necessary, as the exact dimensions of the enlargement must not be altered by development, as would be the case if ordinary bromide paper were used.

We now turn to the carving machine in which the photographic record is utilized to produce a bas-relief of the sitter. The mechanical details of this machine are somewhat complex; but in its elements the machine consists of three parts—(1) a face plate, which holds the material to be carved; (2) a moving carrier, which holds the photographic record; and (3) a high speed drill and microscope mounted up together, which

can be moved in and out by a controlling lever. The operator of the machine merely has to follow the lines indicated on the photograph with the cross-hairs of the microscope, moving the microscope to do this with the controlling arm already mentioned. In moving this microscope he also moves the drill, so that it cuts the material at vary-depths according to the form of the original subject.

Up to the present Mr. Edmunds has worked with 20 and 40 lines per inch; and he finds that the latter gives a more delicate and faithful rendering of the original. Whether an increase beyond 40 would be better he cannot say, but he fancies that 40 represents the detail quite closely enough when looked at from the ordinary distance of two or three feet. The movement of the carrier of the enlargement is made to correspond exactly to that of the carrier of the material to be carved, both movements being mechanically locked together for this purpose. Mr. Edmunds has had good results in boxwood, mahogany, and ivory, but has found the greatest ease of working in alabaster.

With regard to degree of relief, this is a question which requires a good deal of attention, as certain subjects show up better with a relatively deep relief. The inventor has found that portraiture about a third to a half of the full relief of nature gives the best results.

Mr. Edmunds, who is well on in the thirties, saw service during the war with the 2nd Scots Guards, with which regiment he earned the M.C. He has always had a deep interest in photography, and since his demobilization in April, 1919, has devoted the whole of his time to perfecting his invention. It is understood that he will read a paper dealing with "Photo-Sculpture" before the Royal Photographic Society early in December.

The Sutlej Valley Project.

The Sutlej Valley Project in the Punjab has lately been approved, in its technical and administrative aspects, by the Secretary of State, who has also confirmed the agreement arrived at between the Punjab Government and the States of Bahawalpur and Bikaner as to the terms upon which the three parties will participate in the project. Final sanction has, however, been deferred pending the formulation of definite proposals for the financing of the work.

To understand the scheme, it is necessary to realize the conditions at present prevailing in the Sutlej valley. There are, on either bank of the Sutlej, both in the Punjab and in the Indian State of Bahawalpur, long series of inundation canals, which draw their supplies from the river whenever the water level is high enough to permit of it. These canals are liable to all the drawbacks which invariably attend inundation irrigation. There are no weirs at their heads and, in many cases, no

means of controlling the volumes entering them; consequently, while a supply is assured in a normal year during the monsoon months, it is liable to serious fluctuations according to the seasonal conditions. In a year of inferior rainfall little water enters the canals; in a year of high supplies they are liable to grave damage by floods. Generally speaking, they commence to irrigate during May, when a small supply is usually received, and by September the volume has, in a normal year, fallen once again to an inconsiderable quantity. But, even in these adverse conditions, these works are of great value and irrigate an average area of no less than a million and a half acres in the tract to be commanded by the Sutlej Valley Project.

The object of the project is threefold. Firstly, it is proposed, by the provision of weirs and head regulators, to afford to the existing canals a controlled supply from the beginning of April to the middle of October, rendering them immune from the present detrimental effect of seasonal fluctuations in the water level and thus converting them from the status of inundation to that of non-perennial canals, by non-perennial canals being understood canals to which a supply is assured during the hot weather and monsoon, though they are closed during the cold weather, when the volume in the river is low. Secondly, the areas irrigated by the existing canals are to be extended so as to embrace the whole low-lying area in the river valley. Thirdly, perennial irrigation, that is to say, irrigation throughout the year, will be given to large tracts in the uplands on either bank, in the Punjab on the north and in the States of Bahawalpur and Bikaner on the south, these tracts being at present entirely unirrigated and, in consequence of the very low rainfall, waste. The system of dividing the irrigation into perennial and non-perennial ensures the best use being made of the water available. Only 7,000 cubic feet per second are required during the cold weather when the supplies are low, whereas a maximum of 48,500 cubic feet per second will be drawn off during the hot weather and monsoon when, owing to the melting of the snows and the rainfall in the catchments of the rivers, water is plentiful.

The project consists of four weirs, three on the Sutlej and one on the Panjnad as the Chenab is called below its junction with the Sutlej, with twelve canals taking off from above them. This multiplicity of weirs and canals may seem to be a peculiar feature of the proposals unless the immensity of the whole

scheme is considered. The project really consists of four inter-connected systems, each of the first magnitude, each weir will control about one and a quarter million acres of irrigation, the total annual irrigation from all the weirs being nearly three times that contemplated under the Triple Canal Project, the largest system constructed in India up-to-date. It has, moreover, been found economical, in order to obviate the loss of water entailed in carrying small supplies in very large channels, to provide separate canals for the perennial and non-perennial irrigation, the existing inundation canals being linked to the latter.

The total area to be irrigated from the project is 5,108,000 acres, or nearly 8,000 square miles. Of this 2,075,000 acres will be perennial and 3,033,000 acres non-perennial irrigation, 1,942,000 acres will be in British territory, 2,825,000 acres in Bahawalpur and 341,000 acres in Bikaner.

The total cost of the project is estimated at Rs. 1,460 lakhs. Upon this a return of 12½ per cent is anticipated from water-rate alone. But the scheme has another and even more important source of revenue. On the introduction of irrigation, no less than 3¼ million acres of desert waste, the property of the three parties concerned, at present valueless, will become available for colonization. It is customary, in the *pro forma* accounts of irrigation projects, to credit a scheme with the interest on the sale proceeds of Crown waste lands rendered culturable by its construction; if this is included, the annual return on the project will amount to nearly 38 per cent.

Palestine's imports for the first eight months of this year totalled £E.3,614,592, as compared with £E.3,192,355 for 1920, an increase of £E.422,237. The exports for the same period amounted to £E.562,021, as against £E.631,061 for 1920, a decrease of £E.69,040. Trade with the United Kingdom increased as far as exports were concerned, as compared with 1920, to the extent of £E.240,713, but imports show a falling off of £E.8,386. The figures for five months ended August, 1921, show that the imports from Germany into Palestine amounted to £E.97,326, and the exports to Germany to £E.115.

Stocks of cheese in Holland on January 1, 1921, amounted to 17,000,000 kilos, compared with 25,000,000 kilos at the beginning of 1920. Exports last year were 45,241,000 kilos, against 12,416,000 kilos in 1919.

Economies in the West.

By Arnold Wright.

London, December 9, 1921 :—There are welcome signs that the cloud of depression which has so long overshadowed the manufacturing trade of Great Britain is lifting. The tin plate industry which was ruinously affected by the fall in prices is once more becoming active; blast furnaces which were damped down at the time of the coal strike are again in action; and generally throughout the industrial field a more cheerful feeling prevails than has been shown for a long time. It will, however, require a still further fall in the cost of labour and of raw material before the wheels of commerce are revolving in the old prosperous way again. The key to the situation is coal. So long as prices are at their present high level there can be no lasting revival of industry. This staple product enters into every form of manufacture as it is especially vital to the highly important steel and iron industry where an increase of a few shillings a ton in coal makes all the difference in the competition which has to be faced in the world's markets. It is probable that the tendency already shown to lower rates in the coal trade will be maintained to the advantage of the nation's trade position and to the special benefit of the export trade. The miners are working well and are peaceably accepting conditions which a short time since they would have rejected emphatically. There is some talk of a return to longer hours and this may be agreed to if the markets continue depressed. In any event we seem to have entered a period in which Capital and Labour in the coal field are disposed to act more harmoniously together.

SHIPPING POSITION.

Shipping, as much as almost any industry, has been adversely affected by the trade depression. It was publicly stated a day or two since that at the present time no fewer than 700 ships are laid up in the United Kingdom these representing 3,000,000 tons dead weight carrying capacity or about one-fifth of the total British tonnage. Since March freights have fallen 75 per cent and on many routes they are now at pre-war rates. As on the other hand the cost of running ships has risen from 150 to 200 per cent, it may be understood that there are very serious searchings of heart in shipping circles. Lord Inchcape, the well-known head of the P. & O. and the British India Company voiced the prevailing feeling

of anxiety at the Annual Meeting of the former Company on Wednesday. Sketching the conditions which the Company had to face in the past year he gave a vivid description of the situation, one which is worth reproducing as a piece of evidence in regard to the labour demoralization which has been not the least of the causes producing the depression. After stating that the Company had had "a wretched year", Lord Inchcape observed :—"Government control of coal landed us in enormous prices up to the spring and then the coal strike came necessitating the sending of our vessels to the Continent to be coaled. Then we had the joiners' strike involving long delays and the diversion of steamers to the Continent for overhaul. In addition to these disabilities we have had to bear enormous increases in wages, both afloat and ashore; and to crown everything, trade unions and wages boards have kept the costs of production in this country so high that the world has been unable to purchase from us, and steamers have been leaving this country with nothing more than ballast cargoes and often not even these and there being in consequence a greatly lessened demand for raw material it has been extremely difficult to find homeward cargoes." The speaker's strong denunciation of official extravagance in the same speech has served to focus public attention upon his review of the shipping position, and there is little doubt that in the coming year practical measures will be adopted to deal with the evils he so remorselessly laid bare.

SUGAR-CANE IN THE COLONIES.

Owing to the remarkable fillip given to the cane sugar industry by the war, a number of the Colonial Administrations are giving special attention to the cultivation of sugar within the territory under their control. Perhaps the most ambitious of the efforts made to increase British grown sugar is that of the Federated Malay States Government. Details of the measures adopted are to be found in the report for 1920 of Mr. L. Lewton-Brain, Director of Agriculture in British Malaya and a reference may be fittingly made here to the facts as an illustration of the importance given to the subject in the tropical dependencies of the Crown.

The report states that with the high prices ruling for sugar, the question of reviving the industry had received a certain amount of

attention during the period under review, and applications had been made for large areas of land for the purpose of taking up the cultivation of sugar as a sole crop. A committee was formed to investigate the matter and report to Government as to the advisability of granting facilities for the cultivation of sugar, with a view of re-establishing the industry on a permanent basis. With the help of the Agricultural Inspection Division, a collection was made of local sugarcanes from the different districts throughout the Federated Malay States and Straits Settlements, and these were planted at the Experimental Plantation, Kuala Lumpur. An effort was also made to introduce the best types of canes which are now being grown in all the more important sugar-growing countries in the tropics, and the planting materials were expected to arrive early in 1921. Land is being offered at special terms for sugarcane cultivation, and suitable areas are being reserved.

Apart altogether from the question of encouraging the cultivation of sugar for export, there would appear to be reason for believing that a good market could be found for locally grown sugar, provided facilities existed for refining the crop. The statistics for 1919 of the Straits Settlements show that 97,340 tons of sugar, valued at £ 3,815,976, were imported into the Colony mostly from Java and other parts of the Dutch East Indies. Of this quantity, 65,988 tons were exported, of which 13,051 tons were sent to the Federated Malay States and the other Native States in the Peninsula. The trade statistics of the Federated Malay States give the imports of sugar as follows over a period of three years :—

	Tons	Value
1918	8,194	£147,781
1919	9,893	£383,021
1920	7,379	£530,700

MARKETS FOR BRITISH GOODS.

In connection with this question of sugar cultivation in the Colonies it is of interest to note that there is a growing appreciation in home circles of the potential value of the Overseas territories of the Empire as markets for British goods. Mr. H. G. Williams, a well-known industrialist who is prospective Parliamentary candidate for Wednesbury, speaking a few days ago at a meeting of the Primrose League pointed out that each Overseas British subject buys nearly $3\frac{1}{4}$ times as much from Great Britain as each foreigner. India, Australia,

South Africa, Canada and New Zealand, he said, were better customers of this country than the whole of Europe. Transport improvement, agricultural research and in some cases irrigation were the keys which would open the door to immense prosperity for the Crown Colonies and the Home Country. As examples of the possibilities of the development, Mr. Williams mentioned that whereas thirty years ago cocoa was unknown in the Gold Coast that Colony now produced more than a third of the world's supply. He added that the bulk of the world's supply of rubber and tea were also produced in the Crown Colonies whose resources we were only just beginning to tap. The speech is one of many indications of the trend of public opinion. The view is becoming very general that too much importance has been attached to the European market for British goods—a market which even before the war was largely closed to our staple manufactures by high tariffs, and too little to the tropical regions of the Empire with their immense natural and largely undeveloped riches. Mr. Winston Churchill, the Colonial Secretary, is the right type of man to be in charge of Colonial destinies at this critical period. He has imagination and enterprise and may be trusted to make the most of opportunities of development. In some ways his administration is likely to be as memorable as that of Joseph Chamberlain who may be said to have laid the foundations of the existing progressive colonial system.

An Abo correspondent reports that arrangements have been made between the Finnish Forestry Department and a Swedish syndicate of sawmill owners for the sale of 3,000,000 trees from the northern ranges. The contract is being financed by Swedish banks, the purchase-price being 4,200,000 kronor (about £250,000 at present rate of exchange), 90 per cent of which is to be paid this year. The time of delivery expires in 1927, and the price is 15 öre per cubic foot, which at the present rate of exchange is about 16 Finnish marks (say 1s. 6d.) per tree.

The United Fruit Company of Boston, has decided to construct a pier in Kingston Harbour, Jamaica. The structure will be one of the largest and most up-to-date of its kind to be found at any port in the Caribbean Sea. Accommodation will be provided for the docking at one time of from six to eight of the largest ships of the company's passenger and banana carrying fleet.

Industrial Notes from the United States.

By A. T. Marks.

Washington, D.C., U.S.A., Dec. 1921.—On account of the large number of properties and uses which have been attributed in the popular mind to zirconium it has come to be styled the "mystery metal". An investigation regarding the preparation and uses of metallic zirconium and its salts has just been completed by the United States Bureau of Mines, and the results made public.

The compounds of zirconium have numerous important uses and many more uses will doubtless be found. Investigations have indicated that sintered or coherent zirconium metal is very resistive to acids; that it can be used for electrodes, and it will doubtless find many metallurgical uses. A steel containing zirconium has been proposed for use in armour plate and automobile parts, and nickel zirconium alloys have been suggested for high speed cutting tools and for cutlery. Numerous articles in American Scientific journals have recommended the use of zirconium oxide as a refractory, an abrasive, a pigment in paints, and as an opaquing agent in enamel ware. The salts are now being widely used in the textile industry as a mordant or dye-fixing agency, and also for weighting silk.

Zirkite fire brick are being extensively used for furnace linings as well as for many other purposes. Although zirconium oxide has not proved very satisfactory for gas mantles nor for arc lamps, it has been used for polishing powders, insulators for both heat and electricity and with success in the Nernst lamp. Being absolutely non-poisonous zirconium oxide is finding wide use in prints and lacquers, where its resistance to physical and chemical agents is proving highly valuable. As an abrasive, zirconia, zirconium silicide and zirconium carbide are suggested for a great number of uses, the carbide particularly as a substitute for the diamond in cutting glass. Zirconium oxide, because of its non-toxic nature, is being used in place of bismuth, nitrate or carbonate, in Roentgen therapy. It is also said to have medicinal value. Zirconium oxide and nitrate have been suggested for use in the extraction of oxygen and nitrogen from the air. The oxide is also being used as a filler in the manufacture of rubber goods.

In flashlights, amorphous zirconium, mixed with certain oxidising agents, burns with a marvellously bright light; but it is said to be

doubtful whether the metal would be cheap enough to use in place of the usual material. Coherent white zirconium metal, on account of its acid-resisting properties, has been suggested as a substitute for platinum in certain cases. Its alloys are being used extensively in the manufacture of rust-resisting apparatus. Crucibles prepared from zirconium oxide are superior for high temperature work to any crucibles now on the market.

Taken all together, zirconium is claimed to have more uses, all of them important, than any other metal ever discovered.

NEW FIRE ALARM OPERATED BY SMOKE.

A new, unique and interesting form of fire alarm has just been invented in the United States. It depends upon its action in the presence of smoke and is not affected by temperature changes which usually are the chief factors in the operation of most fire alarms. The smoke detector consists of a metal cylinder about eight inches long and two inches in diameter, open at each end, so that air can circulate freely through it, and containing two rectangular metallic capsules, one of which is considerably larger than the other. The detector, only one of which is required for each apartment to be protected, is fixed in a high central position, to which the smoke on the capsules is to cause one to bend more than the other. The differential movement is employed to complete an electrical circuit through a relay, and, by means of the latter, a large electric bell or other alarm signal may be operated.

The apparatus can be used either independently or in conjunction with detectors depending on temperature effects, but it is said to have the advantage over the latter that its action is more rapid and reliable. In many fires dense smoke would be produced before any material rise in temperature occurs, and, moreover, the smoke would rapidly fill the whole apartment while the temperature rise would remain purely local for some little time.

More and more the advantages of fire detectors of one type or another are coming to be appreciated, especially in country and small village homes. This, in large measure, is due to the fact that the fire detector is a fit companion for the handy "fire extinguisher," which is such an effective means of combating a fire if taken in the early stages.

ONE POUND OF COTTON.

"Roll your own" is an injunction of the cigarette tobacco manufacturer, and it has now become a phrase that has particular significance in the preparation of packages of cotton for marketing. A machine, just invented here, is capable of rolling cotton into exact one-pound packages, prescribed by the Bureau of Markets, U. S. Department of Agriculture, in the marketing of the staple crop.

The device, which is comparatively simple, consists of an endless canvas belt adjusted on four wooden rollers, one of which is so arranged as to tighten slackness as desired. This roller is controlled by a foot lever, subject to the manipulation of the operator. One of the top rollers is in a receptive mood for opening in admitting the one pound of cotton on the conveying belt. The roller is then closed, and a hand wheel is turned by hand a half dozen revolutions. The roll is thus formed. In this position the paper for covering the package with an adhesive sticker on one end, is inserted and automatically travels around the potential bit of cloth. A few turns of the wheel secures the covering around the cotton.

Until recently, length types of cotton in the standardization of the product were prepared by hand. The cotton specialists of the Bureau of Markets, drawing salaries ranging from \$4,000 to \$5,000, tediously converted the soft substance into one-pound packages entirely by hand. Four men, working all day, rolled forty of the small bundles. By the use of the newly designed machine 110 packets are bundled in eight hours and the services of three cotton specialists are thus taking more useful directions.

ACETYLENE AS AUTO-MOTOR FUEL.

The United States is extensively experimenting with acetylene for use as a motor fuel, and with considerable success. Acetylene has not proved quite as satisfactory as gasolene, however, as yet, according to many authorities.

According to the experts on acetylene and its uses, one kg. of acetylene gave as much energy as 2 kg. or 2.5 kg. of benzol, although the heats of combustion are only as 6 : 5. The reason for this is said to be that there is always an excess of air in the benzol fuel mixture, while acetylene can be burned with its theoretical air allowance. The combustion of benzol is said to be incomplete, while in many tests that of acetylene proved to be complete.

As regards the variation of the acetylene percentage in the air mixture, experimenters state that owing to the high pressures and temperatures produced in the cylinder the advisable

limits ranged from 1.5 per cent to 7.5 per cent of acetylene. With mixtures deficient in acetylene there was noisy back-firing, and with rich mixtures there was "pinking". The pinking is generally ascribed to spontaneous pre-ignition of the mixture by compression.

HOW MORE LIGHT SPEEDS UP VISION.

Still another use has been found for the talking machine. Did you ever try to read the name of a record as the record went around and around on the machine? Of course, you have — and you probably could have done it successfully if there had been plenty of light.

Several famous American illuminating engineers a few months ago decided to construct a simple apparatus by which they could demonstrate to any one the fact that good light enables the eye to see faster.

A cylinder in diameter the size of a phonograph record and about 15 inches high was built, and on the surface of this roll or cylinder letters and figures were pasted. These were of various sizes. These letters were placed in no particular order, and when they had finished the whole thing looked much like an optician's chart, only cylindrical in shape instead of flat.

The lettered cylinder was then put on a phonograph, and when the machine was started the cylinder, of course, revolved. To cover the front of this another hollow half-cylinder was made, but this one had a slot about two inches wide along its entire length. When the half-cylinder was placed over the revolving one only that portion of the moving surface directly behind the slit was visible.

Thus different letters of the alphabet, figures, etc., moved past the opening, and it was the duty of those observing the apparatus to find out which letters they could read. In other words, at the speed at which the machine was then moving to find out which was the smallest size of figures or letters that could be recognized.

During the first experiment, the lighting of the room was that ordinarily found in a workshop or office, perhaps four or five units. After all were satisfied that none of the smaller letters or figures could be distinguished additional light was thrown on, sufficient lamps being used to raise the intensity of the light from four units to over twenty units.

To the surprise of each observer, the smaller undistinguishable figures immediately took definite recognizable shape, while the speed of the machine actually *seemed* to slow down. Of course, there was no change in speed since nothing on the machine was touched; the only change was the increase in illumination.

The human eye is perhaps the most delicate and precious gift that man has, and yet people, day after day, year after year, constantly impair its efficiency by making it work under conditions that are not of the best. If, as the demonstration showed, the eye can see more quickly under light of high intensity, is it not reasonable to suppose that the eye can do a certain amount of work with much more ease when the work is properly illuminated? Make sure that you have sufficient light, whether you are using a machine in the factory or reading a magazine at home.

STAINLESS IRON—A NEW AND STRIKING PRODUCT.

Stainless steel is already a familiar product in the United States and elsewhere, and much has been said about it. It is on the tables and in the kitchens of many American homes. But a new material has very recently appeared in the United States. The new product has been named stainless iron, and it is receiving widespread attention in all parts of the country.

The new stainless iron is really a milder grade of stainless steel, which is a moderately high carbon, and therefore hard, steel containing about 12 to 14 per cent of chromium which bestows the stainless qualities. The main difference between stainless steel and stainless iron lies in the percentage of carbon, stainless iron having no more than 0.10 per cent carbon

or about one-third that usually incorporated in the stainless steel.

The new iron is described as distinctly softer than stainless steel and amenable to manipulation operations quite impossible in the case of stainless steel. These working properties adapt it to use in hundreds of different directions, and it is believed that the requirements for stainless iron in the future are likely to be enormous and to come from the most unexpected quarters.

It is anticipated that the discovery of the alloy will profoundly modify industry so far as light metals are concerned. For the reason that it is softer and more malleable it can be forged, pressed and drop-stamped, and hence utilized for a multitude of articles, parts and fittings which are now made of ordinary iron and various other metals, all more or less unsatisfactory, and which are all liable to be easily oxidized. It is stated that extensive experiments in making the bonnets and wheel discs of automobiles of the new stainless iron have already proved unexpectedly successful, and the pioneers and promoters of rustless iron are said to be confident that its possibilities are almost unlimited. The uses for which it has already been proved suitable take in such a large line of products and manufactures that it may already be considered one of the big metal discoveries of recent years.

Palestine's Soap Industry.

Olive-oil soap is the product of the most importance of the few industries which exist in Palestine (says the American Consul at Jerusalem, Mr. A. E. Southard). The centre of the Palestine soap industry is at Nablus, in the Province of Samaria, 40 miles north of Jerusalem. There are about 30 small factories at Nablus and all are engaged in making pure olive-oil soap. There are almost as many factories at Jaffna (the port of Jerusalem), but the production is not as great as that of the Nablus factories, is not exclusively of the pure olive-oil variety, and does not appear to have the reputation of the Nablus soap. Small factories are found in Jerusalem and elsewhere, but Nablus and Jaffna are the important centres. Nablus is also the centre of an important olive-oil district.

Exact figures as to the total quantity of soap produced in Palestine are not available. An estimate of a production of 8,000 tons annually is probably liberal. The Nablus soap makers' estimate is that they produce

about 4,000 tons in a year when olive-oil is obtainable in sufficient quantities. The value of the soap produced in Palestine varies with business conditions, but the rattle (6,349.5) has at present an average wholesale value of 20 Egyptian piastres. The minor share of the total soap productions, which contain fats other than olive-oil, sells a little cheaper.

Considerably more than half the total soap production of Palestine finds a market in Palestine, Syria, and the trans-Jordan regions, and may be considered local trade. Palestine soap finds its principal export market in Egypt, Syria, Palestine, the trans-Jordan region, and Egypt practically consumes the entire soap production of this country, and there are no important quantities exported to other markets. Generally no Palestine soap goes to the United States, but there is a small factory at Haifa, which caters to a limited but established American demand for pure olive-oil soap. The quantity of this soap exported is comparatively unimportant.

Canadian Trade and Finance.

Review of Business Conditions.

Montreal, 1st December, 1921.—Rising prices have characterized the Victory Bond market during November, and transactions have been on a larger scale. The strength displayed is not unexpected. Declining commodity prices and slower business lessen the demand for investment capital, and lower the rate of interest which such capital commands. It follows that good securities, which assure to the holder a certain fixed return each year, must appreciate in value. As time goes on, and prices decline, the annual interest payments have a constantly increasing purchasing power in terms of goods.

WHEAT.

On November 3rd, for the first time since 1915, "dollar wheat" was quoted in Chicago. The significance of this quotation has changed entirely in the last decade. Whereas in pre-war days it indicated a "bull" market, it represents now one of the lowest points of the recent decline. In Winnipeg, the cash price for No. 1 Northern wheat has been as low as \$1.04 $\frac{3}{4}$ per bushel. For the farmers, the results of this year's crop will in most cases be unsatisfactory; and this is bound to have an effect on business in the East.

The "Northwestern Miller" of Minneapolis, in the course of an editorial on the Fordney Tariff, points out the fact that, although the duties imposed have served to check direct importations of any quantity of Canadian wheat into the United States, the domestic price for wheat in the latter country has none the less been determined by competition in the world's markets, and the tariff has not helped the farmers out of their difficulties.

The same thing has proved true with regard to flour. As a matter of fact, reports from the eastern markets of the United States indicate that Canadian straight grade flour is being quoted there at prices below those made by the spring wheat mills of the Northwestern United States, although Canadian flour is subjected to an *ad valorem* duty of 20 per cent. What has happened, of course, is that prices in Canada and the United States have neatly adjusted themselves to take care of both the tariff barrier and the exchange differential.

COFFEE.

The movement of coffee prices within the past year has emphasized the interdependence,

so far as coffee is concerned, of Brazil and the United States. Brazil finds a market in the United States for over 50 per cent of her vast output — an output which constitutes no less than seventy-five per cent of the world's annual production.

Towards the close of last year, when declining demand from the United States brought the price of raw coffee in New York to 6.28 cents per pound, Brazilian planters suffered greatly. The State of Sao Paulo was particularly affected, as it is the source of 80 per cent of the national crop. Knowing that the world eventually must come to Brazil for coffee, the Government instituted last April a scheme of valorization, entering the market as purchasers, with a view to restoring prices that would be profitable to the planters. The effort so far has been successful. Standard type coffee (Santos 4's) has advanced in price from 9\$000 to 15\$300 per ten kilos* — a gain of 70 per cent. The Government means, if necessary, to continue its support of the market for some time to come.

Valorization operations have involved the purchase of some 3,500,000 bags, and this number may be increased to an appreciable extent. Strong financial resources are required, and Brazil is understood to be seeking loans abroad; but if strength in prices can be maintained until normal buying is resumed, the effort will have been well worth while.

Apart from the credit difficulty, hopes of success seem to be well founded. The statistical position of coffee is strong, as this market is not overshadowed by an excessive visible supply, while the prospective Brazilian crop will be well below the average, if current estimates of 10,000,000 bags are fulfilled. So far as world wide consumption is concerned, any change is likely to be in the nature of an increase, as Europe restores the structure of its pre-war trade.

Later on, the Brazilian Government will be confronted with the delicate problem of liquidating the stock acquired, without depressing prices. Those conducting the valorization operations are confident that this amount can and will be absorbed for export at a good price, unless foreign requirements are curtailed to a

* One milreis (1\$000) equivalent to 14 Canadian cents at current exchange rates.

very abnormal extent. No question of depreciation enters in here, as coffee is one of the few commodities which improve with time. The recent rise in Brazilian exchange, and the resumption of commercial activity in the State of Sao Paulo, are attributed to the renewed firmness in coffee prices. It is possible, indeed, that the milreis might have worked even lower than 10·03 cents, which it touched in New York on July 18th, had not stimulus to the chief Brazilian industry already been applied. During the first eight months of the present year, total exports of all Brazilian commodities declined heavily in value, while imports did not come down in quite the same ratio. The period in question therefore resulted in an adverse balance of trade in merchandise amounting to some \$44,000,000, which compares with a favourable balance of \$25,000,000, during the first eight months of 1920. In spite of this depressing factor, an appreciation of 30 per cent in the value of the milreis in New York has taken place during the last four months — an indication of the influence of coffee conditions on Brazilian prosperity.

GOLD.

Broadly speaking, before the war, the great trading nations of the world based their currencies on gold. Not only was this so, but gold was freely exportable. The result was that gold and goods moved about freely; they moved to the areas where they obtained as much as possible, and it followed that the price level all over the gold-using world tended to be the same. Furthermore, the rates of exchange of the various countries tended to be stable, for they simply expressed the ratio between the gold contents of the principal coins. Since 1914, that perfect equilibrium has been completely disarranged. The production of European countries declined, yet their need for goods, if anything, increased. Their exports fell off to a very low figure; their imports of foodstuffs and war supplies took on vast proportions; and their adverse balances of trade became such that settlement for them in gold was out of the question. This state of affairs has not yet been remedied.

During the years since 1914, the European governments have been shipping abroad, in part settlement for their excess imports, such gold as they could spare. And to the United States, as the great exporting country, this gold has naturally gravitated. The movement has been accentuated since the closing of the war stopped the extension of large United States government credits to Europe. In the past twelve months, 765 million dollars of gold

have come into the United States. Up to August 1st, 1921, the net increase since 1914 in the supply of monetary gold in that country was not less than one billion, six hundred million dollars. Notwithstanding this fact, the gold holdings of many of the European central reserves are larger than before the war. It should be added, however, that subsequent to the outbreak of the war these reserves were built up far above pre-war figures by concentrating in them, so far as possible, all gold privately held.

Where then is the flood of gold to the United States coming from? It has been definitely established that there have been three main sources of the supply — Russian gold, gold exported from India, and South African gold.

The Russian gold has filtered through from European countries, in part through Sweden, where it was sent in payment for foods and other supplies; large amounts also have come through France, and some amounts through other European countries. Before the war, the amount of Russian gold holdings was estimated at \$779,750,000, or about ten per cent of the gold monetary stock of the world. To-day, the value of the gold held is not generally known, but it is thought to be small.

India is an unusual source from which to obtain gold. That country has been termed the bottomless pit for precious metals, and it possesses vast hordes of gold in monetary reserves, in private stocks, and, in addition, a large quantity of the metal is used in the arts. But it is unusual for any part of this supply to be given up, for the reason that India usually enjoys a favourable trade balance. The effect of the trade upheaval of 1920 and 1921 has been to alter this to an unfavourable balance, and, consequently, India has had to draw on her extensive gold holdings to pay for her imports. It is not anticipated that this condition will continue for very long.

Then, finally, there is the gold that is coming from South Africa. That country in recent years has produced about fifty per cent of the annual output of the world. In normal times, the gold is widely distributed over Europe for coinage and industrial purposes. Not so now: there are no gold coins in circulation in Europe.

GOLD STOCKS.

In view of this unprecedented situation, what is the relative position of the gold stocks of the chief trading countries of the world? It is estimated that there are about nine billion dollars in gold in the national and bank reserves of the world, and of this amount the United

States holds more than one-third, in fact, in the neighbourhood of forty per cent. In 1913, the United States held twenty-three per cent. England now holds about eleven per cent; France, ten per cent, Spain, about seven per cent, the Netherlands, three and a half per cent. Other European countries show diminishing stocks. Austria has declined from eight per cent in 1913, to one per cent; Italy, from nine per cent to three and a half; Germany, from nine per cent to four per cent. And, as has already been stated, the Russian reserves are extremely low.

The United States then, has a disproportionate share of the world's gold. For the speedy return to normal conditions of the trade of the world, it would be a much happier sign if some of this gold were to go out of the country. That would signify that the pre-war equilibrium was on the way to re-establishment — that goods were going to the market where gold was plentiful, and that gold was going where it could buy most goods. That would mean that the war-torn countries of Europe had stopped the printing of paper money, and were paying their way.

Industry and thrift are undoubted prerequisites to the attainment of normal conditions in these countries, and to the re-establishment of gold as an effective common denominator between currencies.

GOLD PRODUCTION.

For some years, all the gold-producing countries of the world have reported a decline in the amount of the metal mined. Since the beginning of gold mining in the Rand district, South Africa, in 1887, there has been produced there a total of more than two and a half billions, with a gross profit of more than six hundred million dollars. But while production is holding up fairly well in this district, there is no indication, at the present time, of new and unknown deposits being developed, and a decline in output is looked for in the African fields.

The United States probably has been the largest gold-producing country on earth, for, up to 1917, it had mined a total of \$3,912,708,000. In 1915, it produced over \$101,000,000, but in the following years it gradually declined in production, until, in 1918, the gold output amounted to only \$68,646,700.

Australia reached the maximum of its production in 1903, when \$87,000,000 in gold was mined; since then, a gradual decline has set in, until, in 1916, the returns were only about \$39,000,000. Canada, too, has declined from a production of \$28,000,000 in 1900, to less

than \$15,000,000 in 1917. The same story is told of all other gold-producing countries, for in 1919 the world produced but \$350,000,000 in gold — \$31,000,000, or 8.1 per cent less than in the preceding year. Undoubtedly this falling off largely is due to the increased cost of mining, compared with the fixed value of the gold recovered. High wages, decreased efficiency of labour, and a great increase in the cost of supplies, have been the principal causes of the decline.

The lowering of costs of labour and supplies, that has taken place in the course of the last twelve months, has brought about a change in the gold mining industry. At the present time, there is greater activity in the mines, and we may look for an increase in the world's production of gold during 1921 and 1922.

Montreal, 1st January, 1922.—The most interesting feature, so far as prices are concerned, has been a slackening in the speed of the decline which commenced some eighteen months ago. During the seven months, June to December, 1920, wholesale prices in Canada fell 21 per cent. During the nine months, January to September, 1921, the percentage decline was only 17. It seems probable that the decline during the full year, 1921, will be little, if at all, in excess of the decline during the last seven months of 1920. These are the figures:

Wholesale Prices in Canada		
Department of Labour Index Number.		
	General Commodity Index.	Western Grain Index
May, 1914.....	136.3	131.3
May, 1920.....	356.6	440.5
January, 1921.....	281.3	222.0
September, 1921...	232.7	188.2

Agricultural products have shown pronounced weakness — a weakness which the above statistics do not reveal in full measure, since further declines have taken place since they were compiled. This movement naturally has had a most serious effect on the purchasing power of our farming population.

MANUFACTURING INDUSTRIES.

In the various manufacturing industries, conditions are uneven. The lumber trade was exceedingly dull until a short time ago, when a better demand from the Orient for British Columbian timber, and an increase in shipments from the Maritime Provinces to the United States, assisted the market. It is now reported that more enquiries are being received from England. Business with that country has been so poor that some turn for the better seems warranted. To

refer to only two items, spruce and pine planks and boards, exports to the United Kingdom, during the six months ending September 30th last, were valued at \$2,422,000, as compared with \$13,000,000 during the same period of the preceding year.

The pulp and paper industries have not experienced the prosperity of 1920. Pulp exports especially were affected. Comparing the two six-month periods, ending September 1920 and 1921 respectively, we find in the value of mechanical pulp exported a decline of over 50 per cent; in kraft pulp, a decline of 50 per cent; in bleached sulphite, a decline of some 60 per cent, and in unbleached sulphite, one of almost 80 per cent. Newsprint paper made a much better showing.

The situation is this: Our pulp and paper manufacturing industry has enlarged its productive capacity greatly during the last two years, but is not able at the moment to find a market for its full output. This state of affairs eventually will be remedied by an increase in the world's consumption of paper. In the meantime, profits will be curtailed although production costs are declining. There are some companies which expanded unduly, and were not able to face the reversals in business mentioned above. So far as the industry in general is concerned, the following statement, which appeared in our Monthly Letter for May, 1920, still seems applicable in its reference to the future. "Production of paper, especially newsprint, is being greatly increased in this country. The supply, which is well below demand at present, may very possibly be sufficient to fill all export requirements in the course of the next few years, and there would certainly be a risk of over-production at that date, if other countries were able to increase their output on the same scale as Canada.....But Canada's supply constitutes the main reserve against a world demand, which, even after the present sharp rise in consumption is over, must inevitably tend to increase with growth of population and improvement in the standard of education."

Concerns engaged in the manufacture of textiles, hosiery, underwear, and other allied products, have in general come through the year most successfully, aided by the fact that they had not undertaken any exceptional expansion, and had built up adequate reserves.

The boot and shoe, and clothing industries, which were the first to be affected by the depression of 1920, have noted an improvement in business during 1921.

Iron and steel business has been spasmodic, increased activity being reported from time to time, as large orders were placed by the railways.

Though collections have been slow throughout the year, the percentage of drafts paid has been good, when considered in the light of general conditions.

Commercial failures during the year ending October 1, 1921, were over double the number of 1920. According to statistics made up by R. G. Dun & Company, the liabilities involved during the 1921 period totalled some fifty-eight million dollars, as compared with only eighteen millions for the preceding year. Quebec and Ontario are responsible for eighty per cent of this amount. Failures in Quebec were more numerous than in Ontario, but were on a smaller scale, with the result that liabilities in the latter province are four millions in excess of liabilities in the former.

FOREIGN TRADE.

Grain has done good service in supporting our export trade at a time when most other exports have declined in volume, as well as in value. During the first nine months of 1921, wheat exports amounted to 62 million bushels, valued at \$118,000,000. As compared with the same period of 1920, this represents an increase in volume of sixteen million bushels, but a decline in value of nineteen million dollars. A decline in the volume of exports of various forest products has been noted above. From January to September of 1921, the value of wood, wood products and paper exported was \$136,000,000, a reduction of 36 per cent from 1920.

Our foreign trade for 1921 must be looked on as highly satisfactory, for, if exports have declined, imports have gone down in even greater degree. We are not buying silk, cotton or wool and their products, on the lavish scale of 1920, and what we do buy, costs us far less. Imports of coal and petroleum, too, have gone down slightly in value. The result is that our trade for eleven months of 1921 shows an unfavourable balance of only 23 million dollars compared with one of 128 million dollars in the preceding year.

Owing to stagnation in Dutch commerce the Committee for Economic Policy under the presidency of the Minister for Agriculture, Commerce, and Industry has decided to study the possibility of temporarily prohibiting certain imports into the Netherlands and temporarily raising the duties on others. Credits to home industries may also be granted.

Idea of a University.

By Sir Ashutosh Mukherji, Kt.*

The University must be free from external control over a range of subjects of study and methods of teaching and research. We have to keep it equally free from trammels in other directions—political fetters from the State, ecclesiastical fetters from religious corporations, civic fetters from the community and pedantic fetters from what may be called the corporate repressive action of the University itself. The University must have the fullest independence and the amplest powers in working out its intellectual salvation. There need be no anxiety as to the future of the University if a constitution is wisely planned on these principles, and the exercise of powers is entrusted to academic bodies composed of qualified persons—not so large in size as to lose efficiency, yet large enough to prevent degeneration into intellectual cliques, neither externally unchangeable so as to resist all progress, nor so rapidly changing as to destroy continuity, yet varying sufficiently from time to time to prevent the dominance of personal policies; and finally representative enough to be in touch alike with the experience of the past and the aspirations of the future.

Let me urge one final point of supreme importance for the future progress of the University I have in my mind. It is a self-evident truth that notwithstanding the richest endowments, the noblest edifices, the best equipped laboratories and the most extensive libraries, illustrious teachers, the pioneers of learning, will fail in their efforts to make the University an inspiring home of study in every field of intellectual activity, if we have not in abundance devoted students who may be stimulated along the paths which lead to the temple of new knowledge. The University cannot be saved from inevitable decay and destruction, if the students allow the pursuit of their studies to be disturbed by extra-academic elements. Let them, therefore, even amidst dreadful trials and tribulations, strive to attain that complete self-control, that *atma-sanyama* which purified and ennobled the life of the Indian students in glorious ages past, and which has called forth wonder and admiration in all civilized countries, where the ideals of the

East are still held in honour and reverence. While I earnestly press this point of view upon the younger members of this University, I do not fail to realize that I am widely separated from them in the scale of years and that to me much of that is past which to them is as yet future; but let me assure them that there is a common bond which unites us, namely, the welfare of the University as a great organ of preparation for life. It is my deepest conviction that the normal task of the University student, so long as he is under the influence of the true spirit of University training I have attempted to sketch, is to devote himself to the quiet and steady acquisition of physical, intellectual and moral habits, to arm himself fully for the efforts and trials of his career, and not to attempt to be conspicuous prematurely in the activities of life, political, social or religious. Let him realize that he has not acquired that prudent firmness, that ripe experience, that soundness of judgment in human affairs, which is essential for good citizenship, and will be attained by him only in the battle of life, in the professions and in responsible positions. Let him train himself with an ever open mind in Political Economy, Political Philosophy, Jurisprudence and Constitutional Law; let him acquire an intelligent comprehension of the great lessons of History, studied in conjunction with Sociology and Comparative Religion. But let him not delude himself in his youthful enthusiasm that the complex machinery by which a State is governed, the operation of the hidden forces by which the future of nations is moulded, may be usefully criticized or successfully explored without adequate training, prolonged study and laborious preparation. Let him remember that the priceless possession of the student at a University is the right to discover the truth, to doubt, to test, to see everything with his own eyes. If he affiliates himself with a party and adopts its dogmas, whilst he is still a student at the University, he abandons his invaluable privilege, submits to intellectual slavery, and deprives himself of that academic freedom which is a pre-requisite to self-education, self-knowledge, self-control and self-reverence. Though pervaded by an atmosphere of laudable patriotic aspiration, let him not act under the illusion that the formative period of his

* Part of Punjab University Convocation Address, January 1922.

life spent in the University in quest of truth under the guiding advice of his teachers, based upon their knowledge and experience, will be wasted. Let him not imagine that if he resolutely withstands the allurements of distracting and misleading influences and declines to be dragged into the field of political strife or impressed into the service of partisan contention, he will be too late for the service of his motherland and of humanity at large. When he leaves the University and emerges into the battlefield of life, he will find duties in abundance awaiting him, making imperious calls on his best energies for the increase of the capital of the race. He will then realize that —

“Now occasions teach new duties; time makes
ancient good uncouth;
They must upward still and onward who would
keep abreast of truth.”

Young men of this type instructed in the lessons of History, Science and Philosophy are bound to be animated by the spirit of sacrifice, and should be ever ready to contribute their knowledge to the service of society — that unremunerated service which an educated man may render to society if he is thoughtful and will help other men to think. Consider for a moment the immense influence for good which men of their natural talent and sharpened intelligence may exercise in the country, if they only put their culture to the right use. Half the troubles of mankind come from ignorance, that ignorance which consists less in not knowing things than in ignoring the things already known. The men of thought and culture in the community should be an antidote to the dangerous results of ignorance; it is for them to bring wild theories to the crucible of reason and to withstand rash experiments with obstinate prudence. They have had mental training and plenty of instruction in various branches of learning; they should be full of intelligence. They have had moral discipline and the influences of good example have been steadily brought to bear upon them; they should thus be full of principle. They have had religious inspiration in their homes, if not in their seminaries; they should be full of faith. Nurtured by their Alma Mater, they may well be asked by her, what do you propose to do with your intelligence, with your principle, with your faith. Let them respond in no uncertain voice that they will use them for the seasoning, the cleansing and the saving of their Motherland.

Do not imagine for a moment that I am an advocate of the doctrine that the love of a

man for his country should be in an inverse ratio to the education he has received. On the other hand, I maintain that the culture which leaves a man without true patriotism is only one degree less miserable than that which leaves him without a God. Yet remember that to be full of enthusiasm and overflowing with criticism without constructive skill, may be a sign not of dynamic energy but of palsied enervation. The best learning is that which intensifies a man's patriotism as well as clarifies it; the finest education is that which puts a man in the closest touch with his fellowmen. While, therefore, the men whom the University sends forth to the world should, on the one hand, be fearless in honest criticism of the actions of those in authority and in stern disapproval of national wrongs, they should, on the other hand, remember that the fermenting activity of ignorance is incessant and that sobriety and self-possession constitute the price of social safety. I recognize legitimate differences of opinion touching Governmental policies and would by no means control or limit the utmost freedom in this discussion. The time has long since passed when politics was regarded as an unclean thing to be avoided by those claiming to be educated or respectable; it would be strange indeed, if controversies relative to the administration of our Government or the welfare of our nation could be essentially degrading and unworthy of the touch of the wisest and best of the citizens. Still the staunchest advocate of the liberty of speech and freedom of public criticism must concede that wisdom, warned by the prospect of popular rashness and excess, fixes the bounds of wholesome discussion and sets a limit to political strife. To my mind, the influence of your educated men should lie in the direction of purifying and studying political sentiment, and when the excitement of controversies presses dangerously near national revolution, I would, without hesitation, ask them to warn all the contestants in impressive tones against the perils of a breach impossible to repair. The products of our University should be conservatives, not as thoughtless opponents of that progress which has been the guiding star of civilization, the animating and controlling ideal of humanity but as men who conserve society and save its structure from the smouldering fire of revolution which occasionally bursts out into flames, threatening to destroy to its very foundations the edifice of civilization constructed by the labours of mankind for centuries.

Agricultural Income of Madras Presidency.

The following figures (output for 1919-20) have been compiled by the Agricultural Department of Madras. The Madras Publicity Board which furnishes it to us is not in a position to verify the figures but it approves of its publication for consideration and suggestions by the public :-

Name of the article.	Total area cultivated.	Estimated yield.	Price per unit (ton except where otherwise stated.)	Total estimated value (rounded to the nearest hundred.)
1	2	3	4	5
<i>Cereals and pulses.</i>	Acres	Tons	Rs. A. P.	Rs.
Rice	11,648,286	5,397,466	199 14 2	1,07,88,61,500
Wheat	17,398	4,202	240 0 0	10,08,500
Barley	2,375	780	129 0 0	1,00,600
Cholam	5,501,790	1,510,084	140 10 3	21,23,79,200
Cumboo	3,269,970	851,259	151 12 5	12,92,00,700
Ragi	2,472,754	1,132,273	130 10 3	14,79,20,900
Maize	106,710	39,200	151 12 5	59,49,600
Bengal gram	117,033	21,480	261 1 0	56,07,600
Varagu	1,179,421	444,630	87 1 6	3,87,24,500
Italian millet or Korra	1,081,457	178,330	87 1 6	1,55,31,400
Samai	707,959	123,430	87 1 6	1,07,50,000
Red gram, green gram and black gram	837,796	299,213	235 6 3	7,04,31,900
Unspecified grains and pulses	929,570	..	21 4 4 per acre	2,03,53,700
Total, Cereals and pulses	27,872,519 *	..	..	1,73,68,20,100
<i>Sugar.</i>				
Sugarcane	92,722	264,330	310 15 9	8,22,02,500
Sugar other than sugarcane	83,521	50,000	217 11 0	1,08,84,400
Total, Sugar	176,243	..	..	9,30,86,900
<i>Condiments and spices.</i>				
Chillies	379,388	379,388	649 7 2	24,63,92,700
Onions and garlic	47,717	..	200 per acre	95,43,400
Coriander	134,786	21,060	222 0 0	46,75,300
Turmeric	46,707	83,405	254 0 0	2,11,84,900
Pepper	74,434	17,859	831 0 0	1,48,40,800
Unspecified spices including omam	92,031	..	100 per acre	92,03,100
Total, Condiments and spices	772,063	..	..	30,58,40,200

* Note.—This is less than the total area in the season crop report by the area under horse-gram.

Name of the article.	Total area cultivated.	Estimated yield.	Price per unit (ton except where otherwise stated.)	Total estimated value (rounded to the nearest hundred.)
1	2	3	4	5
<i>Fruits and vegetables.</i>				
Coconuts (copra)	546,136	136,534	427 0 0	5,83,00,000
„ (coir) .. .. .	..	54,614	266 0 0	1,45,27,300
Mangoes	208,784	..	200 per acre	4,17,56,800
Plaintains	114,535	..	400 „	4,58,14,000
Fruits and vegetables unspecified ..	244,230	..	200 „	4,88,46,000
Total, Fruits and vegetables ..	1,113,685	..	..	20,92,44,100
Minor food crops	33,694	..	200 per acre	67,38,800
<i>Drugs and narcotics.</i>				
Tea	44,598	7,964	1,388 0 0	1,10,54,000
Coffee	53,893	8,084	1,131 0 0	91,43,000
Tobacco	228,222	107,452	639 14 7	6,87,58,500
Indian hemp	220	18	1,633 0 0	29,400
Cinchona	2,787	411	341 9 4	1,40,400
Other drugs and narcotics ..	136,494	..	400 per acre	5,45,97,600
Total Drugs and narcotics ..	466,214	..	..	14,37,22,900
<i>Fibres.</i>				
Cotton	2,339,296	407,564 bales of 400 lb.	214 6 1 per bale of 400 lb.	8,73,74,500
Other fibres	170,430	45,651	480 0 0	2,19,12,500
Total Fibres	2,509,726	..	..	10,92,87,000
<i>Oil Seeds.</i>				
Groundnut	1,144,071	426,533	317 13 8	13,55,75,300
Castors	474,644	44,450	318 0 0	1,41,35,100
Gingelly	880,850	116,670	409 7 2	4,77,70,300
Other oil seeds	185,540	17,324	318 0 0	55,09,000
Total, Oil seeds	2,685,105	..	..	20,29,89,700
<i>Dyes.</i>				
Indigo	101,300	1,180	4,352 0 0	51,35,400
Other dyes	1,626	..	50 per acre	81,300
Total, Dyes	102,926	..	..	52,16,700
Miscellaneous non-food crops ..	153,770	..	50 per acre	76,88,500

Name of the article.	Total area cultivated.	Estimated yield.	Price per unit (ton except where otherwise stated.)	Total estimated value (rounded to the nearest hundred.)
1	2	3	4	5
<i>Products of Live-stock.</i>				
Milk { Cows	5,700,110	101,788	} 210 0 0	5,97,93,300
{ Buffaloes	2,561,193	182,942		
Wool { Live	2,223,700	1,985	} 611 0 0	33,94,700
{ Dead .. .. .	.. .. .	3,571		
Hides	7,284,420	.. .. .	7 11 0	5,59,99,000
			per hide	
Skins	21,006,751	.. .. .	3 1 8	6,52,08,500
			per skin	
<i>Other products of Live-stock.</i>				
(a) Cattle dung used as fuel .. .. .	.. .. .	.. .. .	.. .. .	84,27,700
(b) Meat, bones, horns, hoofs and hair on carcass .. .. .	.. .. .	.. .. .	.. .. .	7,03,04,700
(c) Earning of cart bullocks employed on non-agricultural work .. .. .	.. .. .	.. .. .	.. .. .	1,28,91,000
Total Live-stock .. .. .	.. .. .	.. .. .	.. .. .	27,60,18,900

SUMMARY

	Rs.
Cereals and pulses	1,73,68,20,100
Sugar	9,30,86,900
Condiments and spices	30,58,40,200
Fruits and vegetables	20,92,44,100
Minor food crops	67,38,800
Drugs and narcotics	14,37,22,900
Fibres	10,92,87,000
Oil seeds	20,29,89,700
Dyes	52,16,700
Miscellaneous non-food crops	76,88,500
Live-stock	27,60,18,900
Total	3,09,66,53,800

Criticism being invited on the above estimates special attention may profitably be directed to the following observations and explanations:—

(1) With regard to the origin of the statement, at the meeting of the Board of Agriculture at Pusa in 1919 one of the chief subjects of discussion was the condition of Agricultural statistics in India and the best means of improving them. Among the proposals agreed to was that it was desirable that each Provincial Department of Agriculture should enlist a special officer to deal with statistics. This

suggestion was acted on by the Government of Madras and a Deputy Collector was appointed as Statistical Assistant to the Director of Agriculture on 22nd February 1921. Even before this, special attention had been paid to agricultural statistics by the then Director of Agriculture Mr. G. A. D. Stuart. I.C.S.

(2) The reliability of the figures set out under different heads varies. Those given under column 2, acreage under different crops may be relied upon as being extremely accurate, the percentage of error being inappreciable. Nearly the same thing can be said for column 4 price per unit, except in those instances where instead of a price per unit of product, a figure is given for the money yield per acre. These figures are necessarily somewhat speculative. Figures under column 3 of estimated yield are obtained by multiplying the estimated yield per acre for each district by the number of acres under the crop in that district and adding together district totals thus obtained. Great pains have been taken to get as accurate an estimate as possible for the average yield per acre but there is

necessarily some doubt with regard to the amount for each district. It is however believed by the department the errors of over estimate and errors of under estimate are about equally numerous so that they practically cancel one another. It is believed by the department that the final error is small and certainly less than 5 per cent.

(3) One figure is of exceptionally speculative character. It will be noted that the estimated value of all the milk produced by over 82 lakhs of cows and cow buffaloes is only Rs. 597 lakhs. This comes a little over Rs. 7 per cow or cow buffalo per annum or between 3 and 4 pies per cow per day. It hardly seems credible that even allowing for a very large proportion of cows that at any given moment are producing no milk or none beyond what is taken by their calves, the average daily output of milk per cow should be so small that it would take three cows to produce one anna worth of milk per day. Nevertheless the Agricultural Department believes that this estimate is approximately correct.

(4) The total figure obtained, *viz.*, 3,09,66,53,800 represents the estimated contribution of the industry of agriculture to the total income of the whole Presidency. It is to be noted that it is not an estimate of the total income of the agricultural classes, because it is obvious that the agriculturists themselves do not enjoy the whole of the income contributed by agriculture. A good deal for example falls into the pockets of the money-lender.

(5) It is to be noted that a number of items of agricultural produce are not included. The biggest of these is straw. Straw is excluded together with cotton seed and horsegram because it is held that if these items were included the final total would in effect be counting them twice over. For these things are mainly used to feed animals whose labour is required to produce cereal and other crops. For the same reason manure is not included. The question is suggested for consideration whether it is right that these items should be included and also whether any items which are included ought to have been excluded for the same reason. Another item which is excluded, which is of considerable statistical importance, is the juice of the palmyra and other palms used for making toddy. The question is suggested for consideration whether this ought to be included, and if so how the price should be estimated. It is to be noted that no deduction has been

made from the totals for human food grains in order to allow for a part of the produce being used as the fodder for animals. Statisticians in North India have made considerable deductions in estimates on this score but it is held that in South India grains grown for human food are not given to cattle. A number of minor items of agricultural produce are also left out on account of their relative unimportance, such as the milk of sheep and goats, eggs and poultry. These are omitted because they are not of much statistical importance and the value of them would be extremely difficult to estimate.

(6) With regard to the prices, they are the wholesale prices in the local markets, deduction being made to allow for the cost to the cultivator of bringing or sending his produce to the market. There is no allowance for waste. It may be urged that as a certain amount of produce is necessarily wasted between the time of the harvest being gathered and the grain or other produce actually reaching the consumer, that an allowance ought to be made on this head. On the other hand it may be replied that in passing from the harvest field to the consumer the produce is continually increasing in market value and if allowance were made for waste during this period, allowance should also be made for increase in the market value.

(7) Taking the agricultural contribution to the total income of the Madras Presidency, according to the above estimate at approximately Rs. 310 crores the question is naturally suggested what is the total income in produce and services contributed by all other forms of work and industry. Some previous estimates, including the celebrated one to which Lord Curzon gave publicity in a speech on the Indian Budget, have preceded on the assumption that for all India 50 per cent may be added to the income yielded by agriculture in order to get the total income. This estimate, though possibly a fair one for the whole of India, appears to be somewhat high for the Presidency of Madras and the suggestion has been made that 40 per cent should be added to the agricultural income in order to get the total income, because the number of people engaged in industries and occupations other than agriculture according to the Census of 1911, was almost exactly 40 per cent of those engaged in agriculture. If this suggestion be adopted the conclusion would be reached that the total income may be estimated at Rs. 434 crores. As the population of the Madras Presidency,

by the census of 1921, was 42,322,270, the average income on this assumption works out at Rs. 102 per head per annum. If on the other hand it is assumed that the non-agricultural contribution to the total income is 50 per cent of the agricultural contribution, the total income comes to Rs. 475 crores or Rs. 112 per head per annum.

(8) The question may be asked how this estimate compares with other estimates which have been put in a more or less authoritative manner, and specially comparison with Lord Curzon's estimate referred to above is inevitable. This was to the effect that the average income per head for all India towards the end of the last century was not less than Rs. 30 per head per annum and was growing. With regard to this comparison it has to be noted that a rupee had a very much higher purchasing value in the 19th century than it has at present. It is hard to say precisely in what measure the purchasing power of the rupee has diminished. It may be mentioned as a simple fact that in 1899 Rs. 30 would buy 800 lb. of rice and in the year 1919-20 Rs. 102 would buy only about 1,120 lb. of rice. Hence if both the estimates are correct, and the average income for Madras were also the average income per head for all India it would follow that during the past twenty years

there has been an increase of about 40 per cent in the average income if that average income be reckoned in rice. But other commodities have also to be taken into account, and therefore it is difficult to say precisely how large an increase of real income should be deducted from the two estimates assuming both to be correct, and taking Lord Curzon's estimate Rs. 30 exactly instead of at something over Rs. 30.

(9) Nevertheless, again assuming the accuracy of the above estimates and calculations they indicate that the average income of India has increased in the last 20 years in real values as well as in rupees. Opinions are invited with regard to the question whether this conclusion is supported or contravened by the other evidence available. It is a well known fact that many public speakers and writers assert that India is continually becoming poorer. It is on the other hand generally admitted that the standard of living is rising and that there is a greatly increased demand for many things which used to be regarded as luxuries, and for better housing, more education and many of the other conveniences of life.

On all the above questions the opinions of Economists and Statisticians are invited.

Mineral Licenses in Mysore.

The following Order No. I. C. 3203-4—Geol. 94-20-6, dated 1st December 1921, has been issued by the Mysore Government:—In his letter of 4th August 1921, the Director, Department of Geology, has submitted certain proposals calculated to yield increased revenue to the Department. These proposals involve the enhancement of the rates of fees, rent, etc., now in force. Dr. Smeeth, who was consulted in the matter, is of opinion that the present time is not opportune to enhance the burdens on the prospecting and mining community.

2. On a careful consideration of the proposals now received, Government are pleased to direct as follows:

(i) The fee for the certificate of approval will be raised from Rs. 5 to Rs. 25 and the fee for the renewal of the same from Re. 1 to Rs. 5;

(ii) as regards the fees for exploring licenses, no increase is called for, but in cases where

special protection is given in respect of any mineral, an additional fee of Rs. 25 will be levied; and

(iii) as regards assignments, a fee of Rs. 5 per assignment will be levied.

3. With regard to the Director's proposals about the enhancement of rent on prospecting land and dead rent, Government are of the opinion that the question may be taken up for consideration some time later.

4. The Director, Department of Geology, is requested to submit for the approval of the Government a draft of the revised rules and forms of licenses and leases incorporating the above alterations for publication in the Gazette.

A recent commercial treaty with France allows the admission free of duty into Czecho-Slovakia of 600 touring cars, 5,000 motors, 10,000 tons salt, 1,000 tons aluminium goods, and 5,000 tons woollen stuffs.

The Economics of Hand-loom Weaving.

A very optimistic estimate of the profits to be obtained by purchasing hand-loom and setting weavers to work in them at monthly wages having appeared in the Madras Press, the local Publicity Officer made inquiries in the matter. The Department of Industries, Madras, has supplied the following estimates prepared by its Weaving Expert. Each estimate refers to the production of grey cloth, 42" wide, from 20s yarn, 54 threads per inch being put in the cloth.

CASE I.

If the owner of the loom employs a weaver as cooly at Rs. 20 per month, and also pays for other necessary work, and rent, the estimated cost and returns are :—

COST OF PRODUCTION.

Outturn per week of 54 hours	..	80 yards		
Weight of yarn for Warp and Weft	..	21.6 lbs		
			Rs.	A. P.
Cost of yarn at Rs. 12-2-0 per 10 lbs.	..	27	0	0
Cost of winding, warping and sizing 80 yards at pies 8 per yard	..	3	5	4
Cost of drawing the threads through the healds and reeds for 4 warps each 20 yards long	..	0	6	0
Cost of winding weft of 10.8 lbs. at 6 pies per 20 hanks	..	0	5	4
Cooly paid for weaving at Rs. 20 per month	..	5	0	0
House rent at Rs. 15 per month	..	3	12	0
Repairs of looms and sundries	..	0	4	0
Total cost of production	..	40	0	8
Selling price of cloth at annas 7 per yard	..	35	0	0

In this case, it is clear that, unless something over 8 annas per yard is realized, the owner loses money.

CASE II.

Assuming the owner engages coolies to work in his house, and he himself carries out the preparatory processes with the help of his wife and children :—

			Rs.	A.	P.
Cost of yarn	..	..	27	0	0
Cooly for weaving	..	..	5	0	0
Sundry	..	..	0	4	0
Total cost	..	..	32	4	0
Sale price of cloth	..	..	35	0	0

In this case the owner of the loom, if he sells the cloth at 7 annas per yard, can make Rs. 2-12-0 per week, or Rs. 11 per month.

CASE III.

A weaver who gets sufficient help from his wife and children in the preparatory processes

to be able to spend 54 hours per week in the actual weaving, and who buys yarn from a Sowcar and sells to him, will have to pay more than Rs. 27 per week (say Rs. 28) and will get somewhat less than Rs. 35 (say Rs. 34) for his cloth if the wholesale price be 7 annas per yard. In that case he would earn Rs. 5-8 per week (Rs. 34 less Rs. 28-8-0 for yarn and sundries), or Rs. 22 per month.

It would therefore appear that a capitalist desirous of investing in the hand-weaving industry is more likely to achieve satisfactory results by following the ordinary practice of financing independent weavers, supplying them with yarn, and purchasing the cloth they weave, than by himself becoming the owner of looms and employing cooly labour. A more promising direction for the improvement of the hand-loom weaving industry is a combination of improvement of apparatus and development of co-operation among weavers.

The abolition of the "pay on delivery" postal service between India and Mesopotamia which ended on August 1, has seriously affected the British population of Baghdad. The Baghdad Chamber of Commerce is approaching the Indian Chambers with a view to concerted action to secure renewal of the postal facilities. The Bengal Chamber has already laid the matter before the Indian Director-General of Posts and Telegraphs and asked him to reconsider his decision.

The Department of Overseas Trade has received particulars of two proposed cables for telephonic connection between Norway and Denmark and Germany. The first proposal is for a cable either from Arendal to Hirtshals or from Fredriksvaern to Hirtshals, to cost about £50,000. The cable between Arendal and Germany would be laid over practically the same route as the existing telegraph line between Arendal and Sylt. The total cost would be about £175,000. On this cable three telephonic and one telegraphic connections could be made.

The Government of Jamaica will build a light railway in the south central section of the island, where a State-owned sisal plantation has been established. A petrol locomotive will be employed to haul trucks from the plantation to the factory.

The Finances of the Madras Presidency.

The prize for the best essay on "The methods of improving the financial resources of the Madras Presidency" offered by the Madras Publicity Board has been awarded to Mr. T. Govindan Nair, B.A., B.L., Vakil, Chowghat, Malabar District.

The essays sent in put forward a large number of suggestions, of which the more important have been classified by the Board as follows :-

I. IMPERIAL REVENUES.

1. Increase of taxation on large incomes.
2. Reduction of the limit of the exemption from Income-tax.
3. Special taxation of non-Indian residents in India.
4. Abolition of exemption from income-tax of mortgage interest in those cases when the mortgagor releases the land or buildings to the mortgagee and receives it back on lease.
5. Increased taxation of imports.
6. Export tax on raw cotton.
7. Increased tax on exports generally.
8. Increase of 20 per cent in the salt duty.
9. Death duties.
10. Increase of the rate of tax on opium to the highest possible limits.

II. PROVINCIAL TAXATION.

1. Tax on animals in return for Veterinary Service.
2. Increase of kist on large holdings, reduction on small holdings.
3. Assignment of waste lands free for five years and subsequent assessment.
4. Revision of permanent settlement of Zamindari lands.
5. Variation of demand from ryotwari land according to the needs of the Provincial Government.
6. Re-introduction of a separate Receipt Stamp.

Note.— This would divert the money received for such stamps from Post Office revenue, which is Imperial, to the Stamp Revenue, which is Provincial.

7. Graduation of Receipt Stamps to a maximum of one rupee.
8. Increased stamp duties on Mortgage deeds, Bills of Lading, Debentures, Memorandum of Association of Companies and Insurance Policies.
9. Increase of Court Fees from $7\frac{1}{2}\%$ to 10% and of the present maximum fee from Rs. 3,000 to 5,000. Levy of a small court

fee by village courts for local purposes.

10. Permission to be obtained from the Government of India for a Provincial surcharge on salt of 4 annas per maund.

11. Increase in Registration fees and reduction in the number of Registry offices.

12. Tax on tobacco.

Note.— The writer calculates that the tax for the Madras Presidency at the same rate as that in Cochin State would yield Rs. 60 lakhs annually.

13. Tax on Chillies.

14. Increase of assessment of dry lands.

15. Taxation of annual value of house sites in towns, unions and large villages.

16. Increase of water charge when lands classed as dry are irrigated.

17. Small tree tax on palms tapped for sugar.

III. OTHER PROVINCIAL EXPEDIENTS.

1. More scientific exploitation of forests combined with State manufacture of furniture and matches.

2. Agricultural Department to be required to pay its way directly, and to be given the use of sufficient waste land to enable it to do so.

3. The Department of Industries to be required to pay its way directly, and to be allowed to organize the available labour supply in jails for this purpose.

4. Increases in cost of living to be met by temporary allowances to Government servants and not by increases in salary.

5. Reduction of Travelling allowances, and limitation of number of days which may be spent on tour.

6. Retrenchment in the higher grades of the service, and abolition of almost all the purely supervising agency. Conversion of salaried posts to honorary posts.

7. Tree planting along roads and in village porambokes.

IV. TAXATION BY LOCAL BODIES.

1. Increase of road and railway cesses for villages which get good service.

2. Permission to Municipalities to levy additional stamp duties on transfers of property.

3. The cess permissible to Local Boards to be increased to two annas per rupee of kist.

4. Increase of the permissible rate of the Education cess.

5. Local property and income-tax.

6. Tax on proceeds of charitable and

religious endowments.

7. Tax on Newspaper advertisements.

*8. Tea and Coffee shop license duties.

A scheme has also been submitted by a village officer for greater economy in administration. This involves:—

1. A grouping of villages for revenue purposes, each revenue village being made as nearly as possible a square area three miles each way. This would economise in the number of village officers required but, it is considered, would necessitate an increase in the pay of village munsiffs.

2. Magisterial powers of Divisional Officers to be transferred to District Munsiffs, and Divisional Officers abolished. Deputy Tahsildar's divisions to be made separate taluks.

3. The size of districts to be reduced so as to double the total number of districts.

4. In Sub-Registrar's Courts all documents sent in for registration to be in duplicate, one copy being retained in the office records and the other retained by the party. This, it is calculated, would greatly reduce the clerical staff necessary in such offices.

Indian and Java Teas in Australia.

In the United Kingdom some thirty to thirty-five years ago Indian teas came to the front and practically supplanted Chinese, although in many districts China tea in some form continued to be consumed.

In Australia we have had practically the same experience. China tea gave way in the first place to Indian and Ceylon teas, but for some years our main source of supplies has been Ceylon, the nice, soft flavour of the latter teas being preferred to the somewhat harsh flavour of Indians.

For a few years past Indian teas have been rather disappointing, but the present season so far shows a quality of Indian teas which will be much appreciated in Australia, and which, in the absence of any flavour in Ceylon tea being obtainable at a reasonable price, must prove of great assistance to blenders in maintaining the general standard of their blends, says the "Australian Grocer."

The very high prices obtained for all growths of tea in the latter end of 1919 and early part of 1920 were followed by a great increase in production. This gave us an enormous quantity of poor quality tea, which has within the past eight or nine months been sold at exceptionally low prices. At the same time really good and choice teas not only maintained their values, but actually increased in price, until at the moment really choice Ceylons are unobtainable, except at prices which will leave little, if any margin of profit to Australian blenders desirous of maintain-

ing the high standard of quality generally associated with their best blends.

The average cent cost of Ceylon tea selling in Colombo sales at present is the highest ever known in the history of Ceylon tea. What is meant by cent cost is the number of cents the tea brings in auction of Colombo, as distinct from the exchange cost.

In the former case the price is governed by demand; in the exchange cost the price is governed largely by finance, or, rather, by conditions brought about by some financial stringency, and possibly altogether apart from any demand for the article concerned.

Undoubtedly the present quality of Ceylon teas must be very good, due in a great measure to finer pluckings. But at prices now ruling it is felt sure that very little Ceylon tea will come to Australia.

Recent arrivals of Java tea have been fairly heavy, and some fine quality teas have been shown at very moderate prices. These may serve to keep things going at present prices for a time; but should the policy of curtailing production be maintained for any considerable time, both grocers and the public will have to pay much more for tea, or else be content with a quality inferior to what they have been accustomed.

Possibly the change might be so gradual as not to be noticed generally, but one thing to my mind, is certain, that choice Ceylon flavour cannot be maintained at present retail prices.

Economic Notes.

INDUSTRIAL, AGRICULTURAL, EDUCATIONAL AND GENERAL.

In the unavoidable absence of Mr. Montagu, Sir William Meyer presided at a recent meeting of the Royal Society of Arts, Indian Section, when a paper by Mr. Alexander Howard of a firm of agents for the Government of India timbers in Europe was read in his absence by his partner. The paper pointed out that the British market was beginning to recognize more fully the economic advantages of the use of Indian as well as foreign timbers. The Bank of England at the new buildings in Finsbury Circus had had the whole of the decorative woodwork made of Indian timbers and various firms were following that example. The experience gathered from the innovation of sending teak here in logs instead of sawn had convinced Mr. Howard of the advantage of marketing timbers in this form. Sir W. Meyer said that he was having his offices decorated and partly furnished with Indian woods. He favoured State agency or close control of exploitation of forests, but experience showed that marketing could best be done by private enterprise as agents. Sir Robert Hart, late Inspector-General, thought that in the past the terms on which the firms had been allowed to exploit forest areas had too often been unduly favourable.

* * *

Dr. Thomas Case is declared by scientists to have given the final blow to the Einstein theory. "Prof. Einstein's theory of space" he writes "is the Achilles heel of his system. If he had said that the same body is quantitative, qualitative and relative, all might have been well, except that relativity would have sunk into its subordinate and proper position in the analysis of body. But his ignorance of the fact that space is body only so far as triply extended has concealed from him the consequence that space so limited is the object of the pure geometry of the Greeks. In the very first section of his popular book on relativity, translated by Dr. Lawson, Professor Einstein begins by declaring that pure Euclidean geometry deals with ideas and, therefore, is not true about things. He then flies off to the contrary extreme that, in order to become true about things, the Euclidean propositions resolve themselves into propositions on the

possible relative positions of practically rigid bodies, and adds that geometry supplemented in this way is to be treated as a branch of physics. But the truth lies in the middle. Pure Euclidean geometry deals neither with those ideas nor with rigid bodies, but with space, which is body so far as triply extended long, broad, and deep and, therefore, a real thing but not a physical thing like a rigid body. Pure geometry and physics are closely connected, but are not the same. The former is a mathematical science, the latter a natural science. Pure geometry has to define and divide space and its segments, and to discover and demonstrate their universal laws. Physics has to discover particular facts and causes, and to account for them by geometrical as well as physical laws. Prof. Einstein would spoil this order of two different sciences by confounding them together. The cause of his error is his oblivion of the fact that one and the same body is, on the one hand, mathematical continuous extended space and enduring time and, on the other hand, physical as consisting of finite bodies from the smallest corpuscles to ourselves, thence to the earth and other planets, thence to the sun, and other stars, up to the permeating and illuminating other which is, apparently, the greatest finite body. While every one of these finite bodies small and great, is on the one hand partially extended and temporally enduring and, on the other hand impenetrable, resistant, passive matter and active force. The truth is that the geometry of Einstein is a false relapse to primitive mensuration by hands and feet, rods and plumb-lines and, what is still worse, to the illusion of the blue sky and the spherical firmament of antiquity."

* * *

In order to increase the seating capacity of the Central Presbyterian Church, Buffalo, New York, which is a stone structure, the front was cut away from the rest of the building, set on rollers and moved a distance of 30 feet with the aid of screw jacks. That portion of the structure moved was 78 feet wide, 65 feet high and 8 feet thick. The actual time required to move the front of the structure was sixteen hours.

Three facts make what Mr. Henry Ford—in an interview in the *Nation's Business*—has to say about railroad management, well worth listening to. He created one of the most remarkable producing organizations of the century; he got himself out of a financial tangle without recourse to the banks; and he recently took over a brokendown, bankrupt railroad, and made it pay, in spite of the fact that it hauled more freight the year he took it over than the year after. And recently his railroad asked the Interstate Commerce Commission for permission to cut its freight rates twenty per cent, a plea which struck horror to the hearts of the railroads brought up in the old belief in the dangers of efficiency. We cannot pretend to judge Mr. Ford's technical recommendations, but his ideas about the financial end and the general operation of a railroad seem eminently sound. He would get rid of the unproductive stockholders, and have the stock held by the employees: "The real purpose of a railroad is to serve the public. There is no reason why it should be diverted from that service and set to doing an entirely different thing—putting money into the pockets of stockholders." And as a corollary to this: "Railroads should not have to go to banks for money." The railway capitalist of the old school has often smiled at such sentiments when coming from progressive and radical theorists, but when they are spoken by a man who saved his company with its own resources and rescued a railway system from the junk heap, he can scarcely afford to be amused.

* * *

The following particulars are taken from the *Review of the Trade of India in 1920-21*:—India has a virtual monopoly of shellac. The shellac markets of London and Calcutta have always been liable to violent fluctuations of price, due largely to ignorance of the real quality and extent of each of the four crops annually marketed, and to speculation as to the probable equation of supply and demand. Before the war, since 1911, London stocks averaged 100,000 cases (of two maunds= $1\frac{1}{2}$ cwt.) or two years' imports. Variations in the London stocks were closely watched in India and over a period of years reductions of stock usually coincided with a rise in the Calcutta rates, and *vice versa*. During the war, however, abnormal conditions prevailed. The demand for shellac on munitions account was considerable, prices in the open market appreciated and stocks declined from 1916. After the armistice London prices fell from approxi-

mately 340 shillings per cwt. for T.N. to 205s. on 1st April, 1919, as compared with 60s. in July-August 1914. Stocks remained fairly steady at about 24,000 cases until the end of 1919 when a sudden reduction occurred, probably due to deterioration of quality. The 1918 crops had been short and those of 1919 were found to be not much better; and demands poured in as trade recovered. Prices, which had risen steadily since April, 1919, suddenly made a phenomenal jump from 570s. in December, 1919 to 830s. in January, 1920, and 860s. in February. From that point London prices declined (with a brief recovery in July) to 350s. in December, 1920 and 310s. in March 1921. Stocks, however, remained at a lower level than at any period since 1907, and were reduced by 1,000 cases each month from December, 1920, until they stood at 9,362 cases at the end of March, 1921. In New York, \$1.60 per pound was reached on 1st January, 1920, as the result of a heavy demand for gramophone records and electrical apparatus, operating on short stocks. Thereafter prices declined to \$1.25 on 1st July and .65 on 31st December.

* * *

Essential oil of garlic, rendered so inoffensive that it imparts no disagreeable odour and leaves no irritant effect, is the "key to the conquest of tuberculosis," according to Alex. Clement, French-Canadian, who served as Private Secretary to three Canadian Premiers and in conjunction with P. A. Arnold, a fellow of the British Chemical Society, discovered this antiseptic. It is claimed, says the *Daily Express*, as the most effective antiseptic that can be administered to human beings, either internally or externally. It is being used in the fight against fevers and various diseases caused by micro-organisms. The antiseptic nature of garlic has been known for 3,000 years, although the remedy is new.

* * *

The human voice may now be clearly heard by an audience of 150,000 people. A device known as the telemegaphone transmits the words of a speaker so that they can be easily heard in the open air for a distance of 600 feet. A series of telephone receivers are placed near the speaker pointing towards him from every angle, so that no matter whichever way he may turn his voice is certain to be caught. The receivers in turn are transmitted to points amid the audience and thrown out simultaneously in five directions. A device similar to the megaphone magnifies the sound, while keeping the enunciation clear and distinct.

"An Englishman in the United States envies the universal recognition of education as desirable." This is the declaration of Professor Graham Wallas, of the London School of Economics. Among other evidences of such recognition Professor Wallas cites the large attendance at American Universities. To these evidences may well be added the enrolment figures of summer schools in American colleges and universities, figures which reveal the aspirations and the activities of the secondary school-teachers of the country, for it is they who constitute the overwhelming majority of summer school students. There can hardly be a sounder token of the "recognition of education as desirable" or a more hopeful augury of better intellectual standards in American secondary schools of to-morrow. The colossal proportions of summer-school attendance are shown in the statistics which represent replies from an inquiry as to 1921 and 1920 summer enrolment addressed to every university, college, normal college, and normal school in the United States. There were 410 institutions which reported having summer schools in 1921, with a total of 253,111 students; a gain of 62,105 students, or about 32 per cent. over 1920. The first ten institutions in the order of enrolment of summer school students in 1921 were:

1. Columbia	11,809
2. University of Chicago	6,000
3. University of Wisconsin	4,547
4. University of California	4,430
5. College of City of New York	3,300
6. University of Colorado	3,264
7. University of Michigan	2,915
8. Cornell University	2,739
9. University of Minnesota	2,687
10. University of Texas	2,584

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Writing on the subjects of artificial lighting in mines in the *South African Mining and Engineering Journal*, Mr. W. H. Jones says that the advantages accruing from a proper and sufficient supply of light would not only offset the actual first increased cost of installing the system, but would enormously increase the comfort of the workers, improve their efficiency, better the supervision and reduce the accident rate very materially. The result of such a combination of improvements would necessarily be reflected in addition to the profits of mining and in an extension of the lives of the mines of the Rand with mutual benefits to the workers, the share-holders and the community.

Australia, New Zealand, and Canada have sent 100 teachers to London as a part of the plan for interchange of teachers between London and the Dominions. These teachers, who are on leave of absence without salary, are teaching in the London County Council schools. As a part of this system of exchange, a number of London teachers are at work in the schools of the Dominions.

* * *

Dr. Longmuir delivered before the Birmingham Metallurgical Society a lecture in which he dealt with the production and the properties of combined iron and steel. Following a sketch showing the development of welding and the production of composite steel, emphasis was laid on the fact that in the case of combined iron and steel, both the iron and steel were melted in crucibles in the same furnace, and cooled together in one mould from the fluid state. The working up of the ingot or "lump" down to the finished product was also reviewed. The uses for iron and steel when combined were shown to be distinctly on the increase, and ranged from the cutting of grass to the shaving of carpets, and the trimming of paper to the working on all classes of wood at very high cutting speeds. From 3,000 r.p.m. to 4,000 r.p.m. are not uncommon, and, therefore, the importance of intrinsic quality is evident. In the case of high-speed woodworking, the use of combined iron and steel showed economy and higher efficiency as compared with the use of solid. The lecturer announced that further research is in progress in the laboratories of Messrs. H. Rossell & Co., Limited, Sheffield.

* * *

The Government of India have decided to constitute a National Electro-Technical Committee in accordance with the resolution of the Chamber of Government Delegates at the International Electrical Congress of St. Louis in September, 1904. In 1908 an International Electro-Technical Commission was formed with its headquarters in London for the purposes of carrying out the resolution of the Chamber of Government Delegates, and under the Statutes of the Commission, each self-governing country is authorized to form an Electro-Technical Committee for its own country to discuss points of interest to the country and to forward its resolutions to the Commission. As the manufacture of electrical machinery in India was too small in 1910, the Government of India then decided to postpone the formation of India's Committee, but remained a regular member of the Commission.

According to the Commission, the Committee in each country should be formed by Technical Societies dealing with electrical engineering, provided such societies have been in existence at least for three years. The Government are of opinion that the appointment of a National Committee may in future be suitably left to the recently constituted Institution of Engineers (India) but this Institution would not possess the necessary authority till September, 1923, when it would be three years old. Till that time the Government have decided to form a Committee of the following three gentlemen: Mr. A. F. Coubrough (of Messrs. Mather and Platt, Ltd., Calcutta), Mr. A. Cochran (of Messrs. Burn & Co., Calcutta) and Mr. C. D. M. Hindley, Chairman of the Port Trust, Calcutta. The Committee will choose its own President and appoint a Secretary and proceed with its work in accordance with its statutes of the International Electro-Technical Commission. The subscription hitherto paid by the Government of India as a subvention to the Commission and towards the cost of its publication, will in future be paid by the Committee, to which the Government of India will until further orders make an annual grant of £130.

* * *

Maple sugar and maple syrup are chiefly produced in the United States of America and Canada. Maple sugar is produced by the evaporation of the sweet sap of several varieties of maple. Some of the product is sold in a more dilute form as maple syrup. This kind of sugar costs more than either beet or cane sugar and would have no place in the world market at all but for its peculiar flavour and fine quality, which make it something of a luxury and enable it to command a higher price. The sugar maple tree yields from the time it is twenty or twenty-five years old till it is seventy-five or even up to the age of a hundred years. As regards the crop of maple sugar in Canada, Mr. E. Haldeman Dennison, the Consul for the United States of America, reports that the maple sugar crop of 1920 in the Province of Quebec in Canada yielded 15,615-141 lbs. of sugar and 1,449,649 gallons of syrup, as compared with 12,157,498 lbs. of sugar and 1,470,775 gallons of syrup in 1919. Early in the season the sugar sold at from \$0.27 to \$0.31 per lb. and the syrup at from \$2.25 to \$2.50 per gallon. As the season advanced, however, weather conditions were such that there were some very large runs of sap and the prices declined gradually, maple sugar selling at \$0.20 per lb.

There is a curious fish called the remora, which is one of the laziest creatures in the world. On the top of its head is a powerful sucker, by means of which it attaches itself to the underside of other fish, or even of boats. In this way it makes journeys of hundreds of miles without moving a fin! The natives of many parts of the world make use of this habit by training remoras to fish for them. They are caught when quite small. A ring is fastened to the tail, to which is attached a strong cord. When a native desires fish for dinner he picks the remora out of a tank and throws it over the side of the boat, letting it swim about at the end of the cord. Presently a tug is felt, and the owner knows that the remora has fastened on to something big. He hauls in his line and up comes the fish with its captive. So strong is this fish that it will bring in a giant turtle twenty times its own weight.

* * *

Miss Olga Nethersole, the actress, was one of the persons that tested the efficacy of a psychogalvanic instrument designed scientifically to detect and measure emotion. The scene of the experiment was the laboratory of Maudsley Hospital, Denmark Hill. Miss Nethersole stood with two fingers of one hand in tubes of water connected with the recording dial of the instrument, and recited a long narrative poem, different passages of which run through the gamut of human emotions. The tell-tale needle of the instrument registered in turn varying degrees of "resentment," "joy," "love," "despair," and "mother love" as unerringly as a thermometer records changing temperature. Miss Nethersole was next told that something was going to be done to her that might be slightly painful. The needle of the instrument instantly recorded "fear". Lady Baldwin was similarly tested with the same result.

* * *

A station for the automatic supply of petrol to motor cars is now being constructed on the Quay de Passy, Paris. The system has been in use in the United States for several years, and the Paris cisterns are a copy of those in use on the American roads. These roadside stations are simply tanks fitted with a feed pipe, and the quantity of petrol furnished to a car is automatically registered by a recording dial. In this way there is no trouble with petrol cans, or the necessity of driving to a garage, and the process of filling is much quicker than by the usual way.

One of the saddest things about smokers is that they will scatter their ashes about. The untidiness might be forgiven, but the danger of fire is more serious. Hence the value of an "ash protector," invented by a New Yorker, Richard A. Hoffmann. It is a small cylindrical frame of aluminium, of skeleton form, that fits over the end of the cigar or cigarette, being held lightly but firmly in place by a wire spring. The frame holds a little sheet of transparent film, likewise cylindrical, which enables the smoker to take a look now and then at the end of his cigar or cigarette, to see if it is burning properly. At the front end of the contrivance is a hole to admit air. When the ash falls off the end of the cigarette or cigar it drops inside of the cylinder. The front end of the cylinder carries a thin steel blade, which may be used as a cutter to chop off the ash. When the cigar or cigarette has burned an inch or so, the device may be shifted back toward the butt end by pinching a pair of wire loops that control the spring.

* * *

The ambition to walk on the surface of water is probably as old as the desire of mankind to fly in the air. We have solved the latter problem, and recent invention at least approaches a solution of the former. "Water skates," as somebody has called them, in order to be satisfactory, must not be too cumbersome. A new invention, fairly acceptable in this respect, takes the form of a pair of lightweight aluminium cylinders, long, narrow, pointed at both ends, and covered with rubberized canvas. They are secured to the feet of the wearer by straps, but in such wise that in case of an upset he can readily detach himself. Beneath the cylinder are paddles which are so hinged as to flatten when the leg moves forward, opening on the backward movement to give the requisite propulsion. The wearer has only to go through the ordinary motions of walking, and his "water skates" carry him ahead. A modification of this invention employs instead of the paddles above described, a small paddle wheel at the rear, which is operated not by leg movements, but by the feet.

* * *

According to an article in the *Electrical World* by Mr. Y. Ishikawa, of the Tokyo Electric Company, more than half the people of Japan live in electrically lighted houses, a percentage claimed to be higher than in any other country. The growth of the electric supply industry in the Island Empire has been remarkable in the last fifteen years, the number of electric supply

companies having increased from 500 in 1903 to 3,400 in 1918, and the installed rating of the plant from 90,000 kilowatts to 1,820,000 kilowatts. At present the generators installed have a rating of over 2,100,000 kilowatts. There are about 6,000,000 wired houses, but the average installation is between two and three lamps, and in Tokyo it is only four lamps per house. In Yokohama 92 per cent, in Nagoya 85, and in Kobe the average number of lamps per house is only 1.2. Successful efforts are being made to increase the number of lamps and to improve the illumination.

* * *

Scotsmen in India are not the only persons to whom the coal-saving possibilities of the Hydro-electric Company, formed to harness the water-power of the Grampians, present an interesting field of speculation. The whole scheme proposed by the Company in question is estimated to cost four million sterling and to yield, when completed, 300,000 continuous horse-power, which is equivalent to a consumption of over a million tons of coal per annum. At present a more moderate plan is being considered for which statutory powers are being asked, the estimated horse-power yield being 56,000 on a conservative estimate. One cannot, in reading these figures, help thinking of the enormous possibilities in the shape of energy which lie locked in the mountainous districts of India. The Western Ghats alone average twice the altitude of the Grampians, their area must be many times as great and their rainfall at least $2\frac{1}{2}$ times as abundant. Besides they are far removed from sources of power derived from coal, while the Grampians form the northern barrier of one of the richest mineral and fuel-producing valleys in Great Britain.

* * *

According to the Report of the Agricultural Department of Assam, for the year ending 31st March, 1921, tobacco experiments are being conducted at the Karimganj Farm, as well as in a few centres in Sylhet district, to see whether the superior varieties of Rangpur can be successfully grown in the Surma Valley. A trained man has been brought from Rangpur and so far the experiments appear to be promising. The tobacco has been harvested and is being cured. In Lushai Hills imported varieties of tobacco were grown at Lungleh and the results were satisfactory: a trial in this crop was made also at the Dhubinalla garden and it grew fairly well. These experiments will be continued.

Economic Gleanings

WORLD'S PROGRESS IN FEW WORDS.

A Ford motor car has 8,000 parts.

Denmark's exports of cheese in 1921 are expected to exceed 11,000,000 kilos., compared with 300,000 kilos. in 1913.

The total value of the products of the Swedish iron and steel industry last year amounted to Kr. 311,648, 086, as compared with Kr. 295,488,837 in 1919.

Cost of living in Denmark has declined 37 per cent, since November, 1920, when the peak was reached, but is still 45 per cent higher than in 1913.

A geologist has arrived in Jamaica from England to investigate into the minerals and water supply of the island on behalf of the Colonial Government.

Columbia University had more than 8,000 registered in its summer session during the past summer and offered more than 1,000 courses.

Agriculture is taught in 1,715 of the 3,166 schoolrooms of Porto Rico. Nearly 40,000 home gardens were cultivated through the efforts of the schools.

The authorized capital of new companies registered in September in India was Rs. 208 lakhs, as compared with the high figures of Rs. 1,600 lakhs in September, 1920.

For the nine months ended September 30, British South Africa's imports were valued at £47,368,364, compared with £78,629,702 in the corresponding period of 1920; and exports totalled £46,419,350, against £68,489,775.

Pressure is being brought to bear upon the Government of Jamaica to abandon the project for a cement factory on the grounds that it should be left to private enterprise, and that the cost of coal would be a serious handicap.

The demand for ploughs and spare parts continues in South Africa, but present prices are said to give little margin of profit. Holders are anxious to clear stocks in view of the expected fall in import prices before next season.

A suggestion has been put forward to the Government of British Guiana by the Sugar Planters' Association of the Colony that the Government should advance \$150,000 to Nice farmers through loan banks to enable them to harvest their crops.

A plan for the construction of nine hydro-electric plants to use the waters of the Sho and Chigusa rivers is under consideration by the Hyogo Prefectural Assembly. It is proposed to commence construction early, and to complete three plants every two years until 1926.

A special tar, similar to Stockholm tar, is being made at Dargaville, New Zealand, from kauri waste, and is finding a ready sale. The wood is piled in pyramidal form and fired, and the heat causes the tar to run down the centre of the pile into a receptacle at the bottom.

According to a notice in *Tidens Tegn* the Kristiania Elektriske Sporvei A-S (Electric Tramway Company) has decided to extend its Lilleaker line to Staback. The extension of this line, which now terminates at Oraker, will cover a distance of about four kiloms. It has been decided to commence construction as soon as possible.

The total production of iron ore in Sweden last year was 4,519,112 tons, or 9.3 per cent. less than in 1919. The value of the iron ore produced in 1920 was Kr. 67,932,757, being an average price per ton of 15.03 kr., compared with Kr. 71,585,036, or an average price of 14.37 Kr. per ton in 1919. The production of iron pig amounted to 470,550 tons, or 4.7 per cent. less than in 1919, which year had also a very low production compared with previous years.

Economic Reviews Reviewed

WITH EXCERPTS AND COMMENTS.

Search for Cheap Power.

A correspondent writing in the *Times Trade Supplement* on schemes for economizing coal, states :

How far coal will succeed in its fight against oil-fuel in the United Kingdom is practically a matter for the coal industry itself. "The supreme industrial search of to-day is for cheap power," declared Sir John Cadman, President of the Institution of Mining Engineers, recently. Coal power to-day is wastefully obtained in this country; and it remains in its present advantageous position mainly because this country produces very large quantities of coal, and practically none at all of the rival fuel — oil.

Long ago it was recognized that the burning of coal in its native condition in grates and under boilers was a wasteful process. One of the first steps towards reform was the treating of the raw material, so that the coal gas is obtained along with tar and other valuable products. Scientists state that even this is not enough, and that if coal is going to remain a cheap source of power in this country it must be treated so as to obtain many more products, from petrol or motor spirit at one end to heavy fuel oil at the other. Of recent years, and especially since the war, some attempt at this object has been made in the United Kingdom. There are several processes with more or less attractive claims; but, though there are exceptions, it would seem that certain people who advocate some of these have as yet few tangible results to show. One or two genuine enterprises there are, and doubtless they will in due time achieve a fair measure of success.

GERMAN ADVANCE.

Abroad, things are rather different. The scientists of Germany, now freed from the burden of discovering new war materials, including poison gas, have returned with zest to the work of industrial chemistry. Although Germany is a poor country in coal compared with the United Kingdom, and its so-called "brown coal" is far inferior to the average product of our collieries, German science in the economic utilization of coal left us far behind years before the war, and has made great strides since the Armistice. A few particulars as to what is being done may prove of interest to British readers.

In certain inner circles of the coal industry, both Continental and English, a great deal has been heard of late concerning what is called the Bergin process. The name is adapted from that of the inventor, Dr. Friedrich Bergius; and most of what is known about it generally is contained in a paper read by him at Stuttgart in the latter part of May this year. As will be seen, however, from what appears below, there have been later developments. The friends of this process claim on behalf of the inventor that he can take practically any coal, and by means of temperature, pressure, and the addition of hydrogen, can obtain in the final result motor fuel, lubricating oils, lamp oil, paraffin wax, and other valuable pro-

ducts. This is accomplished, in particular, by the application of pressures truly enormous for an industrial plant. They range between 100 and 200 atmospheres. In the small plant hitherto used it is admitted that they throw a great strain both on the materials of the plant and on the staff themselves.

COMMERCIAL DEVELOPMENTS.

Since Bergius read his paper the progress of the process in various directions is to be noted. For one thing, a large-scale apparatus has been erected at Rheinau, and is stated to have worked successfully. The operations, however, were only in the nature of tests, and impartial observers who have been able to arrive at the facts state that it is yet doubtful whether it will be a commercial success. Another direction in which matters have developed is directly commercial. It should be explained that the process is suitable for crude petroleum as well as for the liquid product obtained from coal. This partly explains why an agreement has been made between the proprietors of the Bergin process and the Royal Dutch and Shell group, so well known in the world of mineral oil. The object of the deal is to promote the development and exploitation of the process outside Germany. The two parties to the transaction are to be represented to an equal extent on the board of a new company formed to carry it out, with head-quarters at The Hague.

It is understood that this new concern, which may be called in English the International Bergin Company, will not be the exclusive operators of the process outside Germany, but that other important groups will also have somewhat similar privileges. The Bergin process appears on the whole to be a remarkable scientific discovery; but the danger, let alone the expense, involved in maintaining the enormous pressures alluded to has hitherto been a serious disadvantage, especially now that operations of a permanent character and on an industrial scale are projected.

A RIVAL PROCESS.

Bergius is not the only German who has invented a new process for treating coal. He has a rival in Dr. H. Magnus, of Freiburg, in Baden. It will be seen above that the Bergin process is by no means simple; and the trump card of Magnus appears to be simplicity. He uses low temperatures and ordinary pressure. The raw materials to be treated, whether derived from coal or from petroleum, are intimately mixed with hydrogen and led through an arrangement of columns, when what is called catalysis takes place — i.e., the products become more fully charged with hydrogen, and thus become more volatile. For the sake of example, and not as an actual case, one might say that under this process a lamp oil could be converted into a petrol. It is stated on good authority that by the Magnus system good and clean products are obtained from coal; but in this case, also, one must await the operation of the process on a commercial scale before a final opinion can be passed.

OTHER PROCESSES.

There are other interesting processes devised by German chemists for dealing with coal, but apart from the two just mentioned the most attractive is not the invention of a German at all, but of a Czecho-Slovak, Dr. L. Steinschneider. At present he starts from the coal tar got by ordinary methods of distillation. But it is believed on good authority that at his works at Koenigsfeld, in Czecho-Slovakia, he is operating a new plant which will treat the coal right through. In other words, he first slowly distils the coal, causing it to give a very large proportion of liquid, and then he treats this liquid so as to obtain from it a considerable percentage of light products, including motor fuel. It is, indeed, surprising what can be got out of coal by skilful laboratory methods; but the trouble has so far been to utilize these methods in large-scale plants. Steinschneider does it with a very simple arrangement called a retort still, which avoids high temperatures and smelly products, and utilizes practically all the available liquid products of the coal. Like the other two processes mentioned, this one also can be applied to petroleum. Steinschneider paid a visit to this country two or three months ago and gave a confidential explanation of his process in important official quarters, where it is reported to have created a great impression.

VALUE OF BY-PRODUCTS.

Which, if any, of these processes will be adopted in Great Britain in the search for cheap power which Sir John Cadman speaks of, it is impossible to say. Perhaps a British process may be found best, after all. But there can be no doubt that the treatment of coal in the manner indicated is the only way, so far as can at present be seen, to secure power cheap enough not only to compete with oil, but to compete with the cheap power now being produced in Germany and elsewhere.

Coal treated in this way can be converted into products worth many times the value of the original raw material. Besides yielding other valuable commodities, it can be made to furnish enough liquid or gaseous fuel to render this country independent of oil imports to a very great extent, if not altogether.

It is agreed by every one that this result cannot be arrived at for the country as a whole if freedom of individual action is permitted. The remedy would probably lie, as these new processes became more and more reliable, in the oft-suggested prohibition of the use of coal in its raw state as fuel. As coal has been subjected to legislation in a manner that has fallen to the lot of no other British Industry, not even shipping or railways, the prospect of further drastic legislation is a terrible one to contemplate. There is no danger of it for the moment, because no process has been established as a success for the liquefaction of coal on such a scale as would warrant its extensive adoption here; and it is quite likely that if a given process were made compulsory by law, another and a far superior one would immediately be discovered.

In view of the rivalry of oil as a fuel — exemplified in this country during the recent coal dispute — the coal industry must look for its salvation in the not far distant future to some cheap method of converting the raw material into a number of well-defined and commercially valuable products, including liquid and, perhaps, gaseous fuel.

East African Trade.

The *Board of Trade Journal* in reviewing the trade and commercial prospects of East Africa, says : -

H. M. Trade Commissioner for East Africa (Colonel W. H. Franklin, C.B.E., D.S.O.), has his headquarters at Nairobi, in Kenya Colony, the central point in an area of more than 750,000 square miles. His territory comprises the Uganda Protectorate, Kenya Colony and Protectorate, the Tanganyika Territory, and the Islands of Zanzibar and Pemba. It is a very large area with poor and slow communications, concerning which commercial information often takes a long time to collect in spite of the valuable services — which Colonel Franklin gratefully acknowledges — of the Honorary Trade Correspondents at Mombasa, Zanzibar and Dar-es-Salaam. In his report, dated June last, Colonel Franklin deals with his territory as a whole instead of with the constituent areas separately. The whole district is, in his view, one of great potentialities. Although at the moment the total trade of East Africa may appear small when compared with other avenues of British commerce, the countries concerned can, and should, eventually be such great sources of supply of food-stuffs and raw materials to the British manufacturer and such potential markets for the increasing sale of his goods, that they warrant a good deal more attention than the present trade figures would indicate. The Report may seem to the British manufacturer and shipper to deal unduly with the possibilities of the agricultural and mineral development of the area, but it must be remembered that the whole question of import trade is intimately concerned with the development of East African export trade, and to this latter end the activities of the Trade Commissioner's Office have been to some extent, and will for sometime be, devoted in order to organize the export trade and marketing of raw materials within the Empire. The points are obvious that unless these predominantly agricultural countries can become large and profitable sellers they can never be large buyers, and the bulk of their raw materials must be sold within the Empire, for where the seller's money is realized there will he purchase, and, moreover, he can only purchase to the extent that he is able profitably to realize his produce.

The number of direct buyers is not large, and apart from mining development or the opening up of further land for European settlement, the great trade of the future will be for such goods as the natives use. These goods will gradually embrace a larger number of lines, for already a more varied demand is noticeable in those districts in which the native comes into direct contact with Europeans and is developing both technically and industrially.

PROSPERITY AND DEPRESSION.

The last eighteen months have witnessed both prosperity and depression in East Africa. While produce prices in Europe were high business in all directions was good, so that the settler and commercial man were naturally tempted to take on more responsibilities. The liabilities of the latter were particularly increased by the inability or refusal of United Kingdom manufacturers to fulfil overseas orders, thus leading to an accumulation of indents placed at high prices. A false idea of the prosperity of the country was also gained by the advent of some 1,000 settlers, all of whom had a certain amount of ready cash capital. In a good many instances there seems to have been a natural inclination to accept the spend-

ing of this new capital as revenue instead of as capital expenditure. It was seen early in 1920 that the country was suffering from its rigid association with the Indian rupee, which had been the standard coin of the country for many years at the established parity of 15 to the £ sterling. As the rupee advanced in sterling value the producing class awoke to the fact that they were spending an increasingly larger proportion of the sterling value of their capital or revenue in wages, and all services where the rupee charge was a fixed one. There consequently arose a strong agitation that the British Government should stabilize the rupee at a 1s. 4d. basis. This was found impossible, and in March, 1920, stabilization was effected at one rupee to the 2s. florin. In the meantime the rupee had risen from 2s. 4d. to 2s. 10d. and such stabilization was therefore for the time a relief, but shortly after the break in the European produce markets began, and the producing class suffered severely. In many cases it is quite possible they may not be able to carry on, more especially as the rupee has gradually declined to its pre-war relation to sterling, so that all production costs were on the 2s. unit, whereas all revenue from produce still was on basis approximating 1s. 4d.

STOCKS TOO LARGE.

Commercially the position now is that existing stocks are far in excess of the limited demand, and that these stocks have almost all been purchased at a much higher price than it would cost to replace them to-day. Hardly any produce is being shipped and consequently hardly any buying is going on, and it is doubtful whether even with drastic reductions in selling prices the demand for stocks will increase. For the number of people employed and the extent of the trade of the country, the number of insolvencies and liquidations has been numerous, and it is doubtful whether the last of them has been seen. Nearly all commercial houses have reduced their European staff, and consequently unemployment is rife. Estates, farms and commercial houses are trying to cut their costs of production and overhead charges to the lowest possible figure, and it is hoped that the drastic lesson experienced will be good for both producer and trader. No improvement in this calamitous state of affairs is to be expected until the produce markets recover.

THE CURRENCY TROUBLE.

The question of currency again became prominent as the rupee gradually declined in contra-distinction to the stabilized East African value of 2s. (except in Zanzibar, where no currency change was made and the exchange follows that of India), and the help of the British Government was again enlisted to endeavour to get the rupee reduced to 1s. 4d. basis. The effect of these interferences with the natural movement of exchange can easily be judged, and it was to avoid such further troubles that the special Currency Commission appointed in East Africa decided to endorse the separation of East African currency from the Indian exchange, and to recommend the establishment of a coinage on a sterling basis with the shilling as the unit of common use. The first step in this change has been taken by the publication of an Ordinance (7th June, 1921) which provides for the redemption and demonetisation, within one month from the 22nd June, of the silver rupee of the late Imperial British East Africa Company and the silver rupee of British India at the rate of one florin note for each silver rupee. The next step will be to redeem the florin notes by the issue of shillings when available at the rate of two shillings for one florin

note. Transfers between East Africa and the United Kingdom are under the direction of a Currency Board in London, and in January last the Currency Board found itself in difficulties owing to the large smuggling of Indian rupees into East Africa, the temptation of profit by its East African sterling value as against its Indian sterling value being too great to be withstood. It is impossible strictly to guard the coast, and this smuggling is still going on so that, the loss the Currency Board will have to meet is increasing every day until the demonetisation of the rupee is completed. It is to be hoped that every possible effort will be made to expedite the time when the currency changes shall be completed and the shilling be firmly established.

NATURAL RESOURCES.

Wherever there is water or an average rainfall, the fertility of the land is very great. Starting from the coast and all along the low levels, vast quantities of tropical crops such as coconuts, sugar, rice, and fruits will in time be gathered. On the higher levels of Kenya, flax, maize, coffee, citrus fruits and vegetables grow well, also in the case of the first three in Uganda and Tanganyika Territory. Native grown maize is found in all districts. Still higher are the maize and wheat districts of the Nakuru area of Kenya Colony, and the highest districts will, in time, be large stock-raising centres. Farther in towards the regions of the Central Lakes large quantities of oil-bearing seeds and nuts, chillies, etc., are grown, and the land in many parts is suitable for sugarcane-growing. In addition to coffee, rubber is grown in Uganda. The rubber is of the Para species in contrast to the Ceara rubber grown in Tanganyika Territory. The staple crop of Uganda is cotton, mainly grown by the natives; a smaller amount is grown in Tanganyika Territory. Zanzibar and Pemba specialize in the growing of cloves and cocoanuts, the former being peculiar to those islands.

East Africa is generally rich in timber resources, consisting of both hard and soft woods, principal among which are cedar, teak, ironwood, mahogany, oak species, podocarpus, and many other soft woods. In addition, the Forestry Department is planting large areas with imported woods such as eucalyptus, wattle, etc. In spite of these resources, however, timber is still imported into the countries; this being mainly due to the dry rot which is prevalent and the difficulties experienced in properly seasoning the lumber in the tropical climate.

Gold and mica have been exported from Tanganyika Territory, and, in addition, mica deposits in Embu and Sultan Hamud, in Kenya, were worked during the war on account of the Ministry of Munitions. The latter, however, have since been abandoned as not being commercially payable. There are also good indications of other minerals. Two large concessions have been lately granted for prospecting in the coastal area of Kenya, and the promoters have great faith in the possibilities of this district, prospecting there having revealed indications of the presence of coal, oil, iron ore, byrita, gallina and copper. Prospecting concessions have also been granted in Uganda. Graphite has been discovered in open workings and is now being exploited at Machakos, in Kenya. Gold has also been proved in the Mount Kenya district, but it does not seem to be a paying proposition as yet. Oil has been proved in parts of Uganda, but is being investigated as to its commercial possibilities. Gold, silver, lead, tin, copper, and iron ore are known to exist in Uganda.

Mining laws have come into force (13th June), and prospecting licenses are now being issued.

DISTRIBUTING CENTRES.

For a long time the great wholesale distributing and collecting centre on the coast has been Zanzibar. This seems to be partly on account of its being an island and so more or less immune from tribal warfare, and also from the fact of its excellent water supply and central position. As the other coast ports, Kilindini, Dar-es-Salaam, etc., have gradually developed, direct imports have coincidentally increased, but Zanzibar still holds some of its old importance. Its distributing and transit trade is fostered by the Government. Its bonded warehouse and transit shed system is admirably organized and conducted in a manner worthy of a large United Kingdom port, and tariffs are low, so that its transit trade will be a feature for some years to come in the distribution trade of the coast. The Government, bearing this in mind, have embarked upon plans for building a deep-water wharf to facilitate the handling of goods and for the storage of oil for bunkering purposes. Kilindini, on the contrary, has long been handicapped by its lack of wharfage and storage facilities, leading to much loss through breakage and pilferage. These disabilities and the high cost of handling at the port led the Kenya Government to appoint a Port Advisory Board, and since January, 1921, matters have improved. The majority of cargoes received at Kilindini are for shipment up country and to Uganda, but the railway and landing facilities at the port are so congested and inadequate that delays are inevitable. During the past year work has been commenced by private enterprise on a scheme at M'baraki Creek, near Kilindini, to provide lighterage and eventually steamer wharves, but even if this is persisted in it is unlikely that much relief will be felt for at least twelve months. In addition to this improvement a Government contract has just been signed for the erection of a deep-water two steamer berth pier at Kilindini at a cost of £ 1,018,010, estimated to take two years to complete.

GOODS IMPORTED.

As in the case of all Eastern countries, cotton piecegoods are the most important item of the import trade. In the lines in which Lancashire specialises, the United Kingdom would seem to be predominant. In the unbleached lines, however, such as, *americani*, *khangas*, etc., India has, during the last few years, rapidly come to the fore, and has almost ousted Japanese competition and made serious inroads on American competition. The Indian mills seem to be paying increased attention to this coast, and, as their manufacturing science develops, they will become strong competitors of Lancashire in East Africa. In the bleached, etc., lines a good deal of direct trade would seem to be done, but in the native or unbleached lines most of the import trade is re-exported from Zanzibar.

The importance of agricultural machinery and implements in the late year, is, no doubt, due to the large influx of European settlers and to the need for making up for the restriction of imports during the war. Our main competitor in these lines is the United States of America, though in pre-war days Germany competed strongly. A decline in this trade would seem to be inevitable for the next year or two, partly owing to the heavy stocks held by the distributors in the country and partly to the inability of the farmers to purchase until the produce markets recover. The demand in Kenya is all from European settlers, but, in consequence of the Uganda Government's pro-

gressive policy towards scientific farming by the natives, there should be an increasing market in that country.

No expansion in the hardware trade can be expected in the next year or two owing to the heavy stocks held and the limited purchasing power of the area generally. The main competitors with the United Kingdom are at present the United States of America and Japan; a factor for which United Kingdom merchants must, however, be prepared, is strong competition from Germany. Imports of hardware from that country are now coming forward and are delivered at, roughly, 50 per cent under the United Kingdom price of the indents at which present stocks were bought. Various conflicting opinions are expressed as to the quality of the goods, *e.g.*,—(a) Metal wire coming forward has not been up to specification, and has had to be sent back; (b) other lines, such as galvanised buckets, are fully up to United Kingdom standard; but, owing to her depreciated exchange, Germany is bound to make a bid for the East African trade in the lines in which she specialises.

It is commonly said that, in proportion to its white population, East Africa is the largest user of motor transport in the world. The favourite makes to be seen there are, roughly in order of popularity, as follows:—

Touring cars: (1) Ford; (2) Overland; (3) Buick.

Lorries: (1) Ford 1-ton lorry; (2) Chevrolet 1-ton lorry.

Motor cycles—Heavy class: (1) Harley-Davidson; (2) Indian. Lighter class: (1) British make.

Light class: British make first.

With the exception of Uganda, where modern roads add to the popularity and use of the 3-ton lorry, practically all of British make, there are no roads outside the towns in East Africa that can be traversed advantageously by a lorry heavier than 1-ton. In the rainy season these roads are often impassable.

The predominant need of East Africa would seem to be at present a light general utility car of high clearance and standardized parts to compete with the Ford, which retails at £ 250 for the chassis only or £ 300 the completed car. Appearance counts very little if utility can be guaranteed.

In motor-cycles there is only one British make competing with the 7-9 h. p. Harley-Davidson and Indian, whereas in the lighter classes United Kingdom manufacturers undoubtedly command the market. In this class it would seem that a motor-cycle of about 4 h.p.s. to retail at, say, £ 120 would command the market, but the main points to be considered are: (1) Its hill-climbing capacity; (2) its petrol consumption—20 per cent is lost here through the effects of altitude; (3) 3-in. tyres are a necessity, owing to the bad state of the roads.

There is an increasing use of bicycles amongst the Indian and native population, more especially the more advanced and educated native of Uganda. The United Kingdom manufacturer dominates this market.

Though the item of mining machinery does not appear separately in the list of imports, it is bound to become an important item.

COMPETITION.

Through a fortunate combination of circumstances, the United Kingdom has had the bulk of the import trade of East Africa for the last five years. Generally speaking, this is due to (a) the effects of the dollar exchange; (b) the poor satisfaction given by Japan when her chance came; (c) the elimination of

German competition. This fortunate state of affairs cannot, however, be expected to last indefinitely; the dollar exchange seems, from latest advices, to be righting itself; India will undoubtedly take a larger share of East African trade; as manufacturing develops in South Africa, its nearness to East Africa will compel a large trade; German competition is starting even now, for Germany is bound, even at little or no profit to herself, to attempt to secure a large portion of the trade she once dominated. She has lost Tanganyika Territory politically, and, is bound to try and regain her influence through commercial channels. Her former customers, mainly Indian traders, are still on the coast, and it is only reasonable to presume that the Indians will try to work off one country against the other in order to buy as cheaply as possible, though it is doubtful whether German shippers will, for some while, be able to obtain the same help that they utilized before the war in the respect of extended credits. The following are the lines in which competition will be felt by United Kingdom manufacturers, and is even now showing itself:—

United States of America.—Agricultural implements and machinery, hardware, electrical apparatus, industrial machinery.

Germany.—Pottery trades, hardware, electrical goods, and all metal lines.

Belgium.—Glassware, cement.

India.—Cotton piece-goods (eventually), boots and shoes (now).

Aids to this competition will be the direct steamship lines that have been arranged both from the United States of America and Continental ports to the East African coast. The Continental countries are already taking some share of the produce exports of East Africa, and it is only to be expected that in those markets where its produce is realized East Africa will buy.

Colonel Franklin deals at some length with the credit conditions in East Africa and the methods of dealing with the market.

Cinnamon and its Oils.

The current number of the *Bulletin of the Imperial Institute* contains an interesting article on "Cinnamon, its sources, production and trade". The article gives a detailed account of the production of the bark in different parts of the Empire as well as in foreign countries, and a description of the aromatic oils yielded by cinnamon and related trees. The finest cinnamon bark is produced in Ceylon, where the Portuguese found the tree growing wild when they arrived in the island in 1505. Since that date Ceylon has been famed for this spice, but owing to the small financial return it gives to the growers, much of the area under cinnamon in the island has been replaced by the more profitable cocoanut and Para rubber. Ceylon cinnamon, moreover, has had to compete, particularly in the Continental markets, with a cheaper product of coarser flavour from the Far East. Cinnamon bark reaches this country in two forms: the ordinary "quills", used as spice, and "chips", which are distilled for the production of cinnamon oil used in medicine.

The leaves of the cinnamon tree yield an entirely different oil from that of the bark; this oil contains eugenol (the characteristic constituent of oil of cloves) which is employed in the manufacture of vanillin, the well known flavouring agent. Cinnamon leaf oil is produced largely in the Seychelles.

A Defense of the Unearned Income.

A writer in the *Labour Leader* writes:—

The issue of credit before the production of goods immediately and inevitably raises the price of goods already in existence. The issue of credit specifically on account of a certain production, and the measuring of that issue by the amount of the production, would have no such effect. The difference between cost and price would be part of the national credit to be returned by the seller to the clearing house, which would be the source of all costs. The producers, *qua* producers, would have no interest in price, having been paid their commission, the amount of which would depend on various wholesomely competitive factors. Mr. Ernst Dick has missed this vital distinction, obviously because he thinks in terms of the present system. Goods have no value apart from the need of them: over-production is waste.

How is the state to come by the sums necessary to make up the deficiency to the producer? To ask such a question is to demonstrate a radical misunderstanding of Mr. Douglas's ideas. How, I would ask Mr. Dick, does the bank come by the sums it lends to its customers? The need is not to find sums of money, but for the community to actualise its belief in its capacity to satisfy its own needs. Those needs could be satisfied now by one-fifth of the possible production of the machine.

The Douglas scheme, it is true, does favour "unearned" incomes; and rightly so. The more people who live on such incomes, the better; the world will be richer the more people there are unemployed in the sense of not being directly engaged on production. Unearned incomes are not inherently evil; they are so only when they involve human degradation. In any case an unearned income is the only means to freedom. No man who must earn his living has that latitude of speech and movement which freedom implies. If we insist on "work" as a condition of living at all, can Mr. Dick, and those who think with him, say what is to become of the increasing numbers which industry will find unnecessary? Can they incidentally define "work"?

The whole object of the Douglas scheme is to substitute for our voluntary poverty and slavery to the machine opportunities for joyous self-expression—while the machines do the work men made them for. We say "There is enough and to spare for all; and here is the ready means of garnering the abundance." And we find *Socialists* refusing the gift.

Cows and Malaria Fevers.

Lieutenant-Colonel A. B. Fry, I.M.S., in the course of an article in the January issue of the *Indian Medical Gazette* states that the editorial note in the September number on the role played by cattle in the prevention of Malaria refers to a subject which is of the greatest importance in India, where cattle are commonly housed in close association with human dwellings. The observations of Drs. Rouband and Leger have frequently been noted by observers in other parts of the world.

Drs. Edmond and Etienne Sergent (*Annales de l'Institut Pasteur*) reported from Algeria:

"In daytime the place where it is easiest to catch adult anopheles mosquitoes is the pig sty: on a surface of about a square yard we have seen hundreds of anopheles which looked like thorns against the white background of spiders' webs.

"One of the causes of the preference shown by the anopheles for pig styes appears to us to be the heat engendered by the pig in the narrow space in which he is enclosed.

"We emphasised the preference of anopheles maculipennis for dark corners of stables. These anopheles are in the habit of biting domestic animals."

In the report of the Malaria Expedition to West Africa in 1899, Ross and Annet state that the barracks at Wilberforce swarmed with female anophelines and, out of 109 insects examined, parasites were detected in 27. They further make a note that there were absolutely no vertebrates other than human beings within or in proximity to the barracks. Cattle, dogs, cats, bats, and monkeys were absent while, owing to the buildings having been newly erected, there were even no sparrows or lizards.

The Royal Society's Commission to Lagos reports that the sporozoite rate in mosquitoes in the railway camps was 25 per cent at Aro and over 50 per cent at Lokö Meji. These anophelines were all caught in native dwelling huts and Major Christophers tells me that cattle were not a common feature in West African villages nor in these camps.

In comparison with these figures the parasite infection rate in Bengal, which I estimated by the dissection of many hundred anophelines to be about 0.2 per cent was extraordinarily low, and I formed a theory then that the vast majority of anophelines never fed on human beings at all.

In my second report I wrote that "The daytime resting place of anophelines in Bengal is the cowshed and the low mosquito infection rate which we found in Bengal may be explained by the fact that most of the mosquitoes which were dissected by us were not caught in sleeping rooms, where it was always very difficult to find specimens. Cowhouses are packed with animals at night, and the number of anophelines found in them increases in direct proportion to warmth and darkness. The sleeping apartments of houses in Bengal are generally very clean and well kept. Though the cowhouses in the same compound may swarm with anophelines, it is exceptional to find a single specimen in a cook-house or sleeping apartment. As the cattle are penned in these houses at sunset, it is natural to suppose that the majority of anophelines have no desire to go abroad but feed chiefly on the cattle. It is only those wishing to lay eggs that need go outside, and it is probably these insects and those newly hatched that feed on human beings."

Major Christophers in a letter has kindly pointed out that close association with cattle does not always prevent a human epidemic. In the Punjab epidemic of 1908 the cattle zone of Amritsar City was one of the worst epidemic areas. I do not consider that this destroys my theory. It is quite understandable that the presence of cattle may act as a two-edged weapon. Cattle and their warm shelters would certainly attract mosquitoes. The Amritsar epidemic was due to the abnormal number of mosquitoes, and one may argue that though those human beings in the cattle area suffered by the presence of cattle, the rest of the town was largely protected from the abnormal mosquito population, which were attracted to, and remained in, the cattle area.

Major Christophers has kindly sent me a paper read by Dr. Schuffner at the recent Batavia Congress. Schuffner states that he has found that certain species of anopheles actually prefer to feed on bullocks rather than on man and suggests as a prophylactic measure the regular placing of animals between dwelling houses.

Many of the villages in the endemic areas of Bengal are built on high ground surrounded by swamps. If the cowsheds were arranged in a ring on the outskirts of the village with dwelling houses in the centre instead of indiscriminately as is usual, I am sure that the dwelling houses and their inhabitants would be even more free from infestations by mosquitoes than they are at present.

The Silk Industry in Cyprus.

A Correspondent writes to the *Near East* :—

There has been some talk of a revival, or expansion, of the silk industry, and native opinion in parts of the island has been stimulated by the praiseworthy efforts of the Agricultural Department in late years to encourage it, and to explain the great opportunities that are being lost. Sericulture might be largely and profitably developed with no very great effort within a few years were it not for the cloud which hangs over every branch of agriculture, and which is often attributed to apathy and ignorance of the peasantry. It is not, however, so much that Cypriots are to be accused of idleness, for they work industriously enough, in spite of the climate and often of a trying lack of water. But it is always along old grooves, and much more might be done if there were more of a driving force backed by a modicum of financial aid from the powers that be. Much might have been done since, about 26 years ago, Mr. P. Gennadius, the first Director of Agriculture, clearly explained what was needed. It was to Mr. Gennadius that was due the revival of the silk industry in Broussa, after the havoc wrought by the disease *pebrine*, which attacked the silk-worm in France in 1845, and then spread through Europe to Asia. It was M. Pasteur who found the remedy. All acquainted with the Near East have known the beautiful silk fabrics of Broussa, that "important centre of the silk trade of the East," which find their way to Cairo, Smyrna, and many other bazaars. Had fortune favoured the island instead of yielding it a prey to succeeding periods of maladministration, sericulture would have speedily progressed and rivalled that of some other countries. It has been long established in the island. When in the sixth century A.D., the silk-worm was introduced from China into the Byzantine Empire, it soon found its way through Asia Minor to Cyprus, where climatic and other conditions are highly favourable. It is easily acclimatised, and in process of time a Cypriot species was developed. The Cyprus cocoon, which ranges in colour from white to bright golden orange, acquired a reputation of its own. Very pretty silk goods, some of very pleasing dyes, are made and sold in the bazaars of Nicosia, for dresses, blouses, skirts, scarfs, handkerchiefs, and other purposes.

It is true that a good deal has been done to prevent importation of bad eggs from France and elsewhere. But had the directions of Mr. Gennadius been fully followed Cyprus would have produced sufficient eggs of good quality, not only for local use, but also for exportation to other countries. As it is, the quantity produced is negligible, and large quantities of French eggs are imported. A largely increased cultivation of the mulberry tree should of course be one of the benefits which would be derived from increased irrigation, to which the study devoted to this difficult problem this year may, it is hoped in some quarters, lead. All this however, presupposes also a more energetic and expert guidance in the development of this valuable and arrested industry. It is capable, as regards winding and manufacture, of very great improvements.

Continuation Schools.

Speaking on the relation of School to Industry, Mr. William McAndrew, Associate Superintendent, in charge of Extension Activities, Department of Education, New York City, recently said :—

Twenty-five years ago, Mr. Edison made the classic remark, often quoted, that in industry the college man isn't worth a damn. My college days produced men who provoked that emphatic, if inelegant, remark.

The week after my graduation, a chum of mine got me the opportunity to take a trip on his father's schooner. On board was a sailor who had picked up in Naples some ancient Roman coins. He brought them to the college graduate.

"You're just the man I've been looking for," he said. "I've always wanted an educated man to translate these inscriptions." As I had studied Latin four years in high school, and four years in college, of course, I couldn't read his coins and told him so. He was shocked.

Some time later, there was some work to be done. Tom, the sailor, said, "I'll splice this rope and you splice that one."

I toyed with the strands awhile, trying by watching him to get the knack, but was obliged to say, "I don't know how to splice."

Then he uttered an observation on which I have reflected many times: "I don't see what the devil good it did you to go to college; you don't know nothin' and you can't do nothin'."

That was the attitude of the work-a-day world toward the college man in my younger days. The state of feeling of schools toward business was an ostrich-headed isolation in the sand. Academic is our word. It means pertaining to the school. By some process the term has acquired a contemptuous tone. When you wish to dismiss a question as of no moment you say "Oh, that's academic."

Among schoolmasters, I find two types as to their attitude toward this academic isolation. Some, not only admit it, but boast of it. Others, and among such, I class those school people who attend your meetings, deplore that so extended and so expensive a service as public education should be subject to any considerable criticism on the ground of uselessness.

Such criticism must be kept within bounds, reduced and made absurd, if the schools are to obtain and retain that hold upon the public which is essential to pupil support and to proper service.

It must be said in fairness to the schools that some of the criticisms of men in industry are based upon a wrong idea as to what the schools are for. What public education's legitimate purpose is, cannot be in much doubt if we examine the intent of the laws which established schools. Washington, Franklin, Adams, Jefferson, Madison, Monroe, and many other prime movers in the establishment of schools at public expense, agree in specific declarations that, as part of the American system of government, public schools are necessary to train a people to govern itself, to promote justice, to secure domestic tranquility, common defence, and the general welfare. Any school which preponderatingly aims at an academic equipment of its members for their private ornamentation is not defensible as a user of public funds. Any school which, on the other hand, exclusively aims to prepare children as money-makers for themselves, or their employers, is not in line with the fundamental idea of American public education, as ex-

pounded by the men I just mentioned, and as repeated by Webster, by Lincoln, by Cleveland, by Roosevelt, by Wilson, and by every superintendent or commissioner of education. New York State has had from the beginning. Every one here has heard prominent citizens, who ought to, and who do know better, argue as though the main business of the schools is to prepare clerks or salesmen, or skilled labourers. Every one here knows that such is not a prepondering purpose of public schools, and should not be a main purpose of schools paid for by the taxes of all the people. The welfare of the community is the essential purpose of government. A public school, a government agency, has the same purpose paramount. The big aim of public school training is the awakening and habituation of public spirit, consideration for others, tendency and ability to do things for the city, the state, the country, for the general welfare. Let there be no doubt about it in the minds of any one. The breaking of windows, the defacement of walls, disregard for others, is a more serious criticism for the failure of a school, and the failure of a home, when such dereliction occur, than is the production of illegible handwriting or the incorrect addition of numbers.

All right. You see that. You recognize how from the very origin and nature of public schools, it must be true that private advantage, individual accomplishment in John or Mary, must be secondary to the general good.

But, I am not going to oppose the specific purposes of the men and women and firms which make up this society. Those purposes, properly promoted (and I have seen you properly promoting them), are not contrary to, but in accord with the legitimate functions of tax supported schools.

The schools are to nurture citizens devoted to the public welfare. It takes a citizen with a developed intelligence to be of value to the public welfare. Writing is among the recognized means of cultivating such intelligence. Then you who employ writers, are justified in requiring that our writers will so write that one can tell instantly whether he is charging a carpet or a corset. Combining numbers is an ability essential to an intelligent citizenship. Then you, who hire our boys and girls to manipulate numbers, are right in demanding that the training we give in computation shall secure habits of accurate calculation, habits of absolute reliability. Our duty toward the nation is to train its coming citizens in truthfulness, reliability, industry, progressiveness, all the virtues that belong to man as a citizen. There is not a single quality that I have heard you at any time desire for your employees that is not a quality the citizen should have and that therefore, the schools should cultivate.

We, teachers, will continue to insist that our test of the importance of any training in its place is the American idea of public school service: the character-culture of American citizens. You will subscribe to the same proposition and by allegiance to it get all you want if you insist that we do intelligently and persistently work for character-culture instead of harking back to old academic tomfooleries which have a tragic tendency to remain in school practice.

Ridiculing the schools in the newspapers doesn't help; it hinders. Asking an individual school to do this or that isn't of much worth. But a business-like statement of exactly what accomplishment is needed; a definite indication of the lack of it; designating by name and by school the inefficient employee; this statement sent to the head of the system, not to a district superintendent is business.

Cotton Substitute.

Mr. E. C. de Segundo, A.M. Inst. C.E., writes to the *Near East* :—

In the year 1907 a conference of American and European cotton manufacturers was held in Atlanta, Georgia, at which it was stated that the American Cotton Belt could be relied upon to produce all the cotton required by the world's ever increasing demands, and that it was wholly unnecessary to think of opening up new cotton fields in other parts of the world.

The planters had not reckoned with the boll weevil. In 1907 this insect, which first crossed the Rio Grande in 1892, had spread over rather more than one-quarter of the area comprised by the cotton belt. To-day, it ravages the whole area of some 750,000 square miles, and, although the serious menace to this cotton pest was recognized 20 years ago, the strenuous efforts and unremitting researches and investigation of the United States Department of Agriculture have been wholly unsuccessful in discovering any practical remedy for the depredations of the Mexican boll weevil, or even means of appreciably alleviating the results of its activities.

In view of the glut of cotton in 1919 arising from various causes more or less directly connected with the economic after-effects of the war, a determined campaign was entered upon in the United States for a reduction of 50 per cent in the area planted to cotton this season as compared with 1920. The area planted this season was about 25,000,000 acres against about 35,500,000 acres in 1920, or an actual reduction of about 30 per cent. Under reasonably normal conditions this acreage would be expected to produce a crop of between 9,000,000, and 10,000,000 bales, instead of which the latest Government estimate places this season's crop at 6,500,000 bales, and other estimates place it as low as 5,800,000 bales. Moreover, in the opinion of certain experts, a not inconsiderable proportion will be found to be unusable.

We thus have to face the fact that the *effective* American crop this year will probably be under 6,000,000 bales, corresponding to an effective yield per acre of about 120 lb on an acreage of 25,000,000, an alarmingly low yield for the United States. Even taking the Government crop estimate of 6,500,000 bales, the yield per acre would work out only 130 lbs per acre (assuming all bales to be 500 lb bales), a much lower figure than any of record.

But it must be remembered that the term "yield per acre" is not necessarily a true criterion of productivity. Many other factors enter into the question, and it is worthy of note that the variation in the yield per acre during the years of record before 1892 (when the boll weevil first appeared in the United States) is not appreciably different from that during the years of since 1892, *with the exception of this season*. It would appear that this season's abnormally low yield must be attributed almost entirely to the increased activity of the boll weevil, because weather conditions are stated to have been, on the whole by no means abnormally unfavourable.

During the war, the proportion of the American crop spun in American mills increased greatly. The following figures are taken from Shepperson's "Cotton Facts" for 1920 :—

Year	Crop in bales	Proportion spun in American mills.
1915—16 ..	12,862,000	53 per cent.
1916—17 ..	12,737,000	55 ..
1917—18 ..	11,865,000	59 ..

1918—19 .. 11,360,000 48 per cent

1919—20 .. 12,252,000 50 ..

It is clear that if the domestic consumption in the United States continues to be anything like 6,000,000 bales per annum, and if the ravages of the boll weevil and other cotton pests increase in intensity, or even remain as at present, the proportion of the American crop available for export may languish and perhaps vanish altogether. Opinions seem to be divided as to the resultant benefit to the United States, but there can be but one opinion as to the immediate effect upon the world in general.

In view of the conditions and circumstances, economic and other, which have come into existence in the United States during the last fifteen years, it is not improbable that in the near future the United States may find difficulty in raising more cotton than will suffice to satisfy the home demand for spinning, and will recede more and more from the position she has so long held as the premier cotton-growing country of the world. China is stated to have produced 6,000,000 bales this season.

The prospect of cotton becoming a dear textile raw material instead of one of the cheapest, as it has been for two generations or more, is one which can only be viewed with the gravest apprehension, because cotton is a necessity of our civilized life. There are two alternatives :—(1) New cotton fields must be opened up, or (2) a substitute for cotton must be found.

As regards the first alternative so much has already been said and written in these columns and elsewhere that it were a work of supererogation to add more than a brief comment. If the greatest of our export trades—that is manufactured and half-manufactured cotton products—languishes and dies, the blame can only be laid at our own door. For years past far-seeing men have unceasingly drawn attention to the precarious basis upon which our great industry rests; to the folly of remaining dependent upon one source for some 80 per cent of the required raw material; and to the unlimited possibilities of cotton cultivation within certain countries comprising the British Empire, notably India and the Soudan.

As so frequently happens, those in authority—or rather those who should act in that capacity—appear, until quite recently, to have been blind to the increasing gravity of the cotton situation as affecting the Lancashire spinning industry.

Although the artificiality of our conditions of life in this country due to importing some 70 per cent of the foodstuffs we need must have been patent even to the average intellect, and the supreme necessity of maintaining and increasing our export trade in order to be able to continue to pay for our food must have been equally obvious, no adequate steps have been taken to safeguard the supplies of raw materials for an export trade the value of which in pre-war years had reached about £ 114,000,000 per annum.

We complain about our "loss of trade". The simple fact is that we sit down calmly and suffer others to take it from us.

As regards the second alternative, it does not seem to be generally realized that from 90 to 95 per cent of the world's cotton crop involves the concomitant production of a character of cotton seed, which, after ginning, retains a not inconsiderable quantity of short residual cotton fibres, which, although too short for spinning, constitute a valuable raw material for the production of cellulose. Mr. C. F. Cross, F.R.S., whose work in connection with the scientific investigation of cellulose and its derivatives is known through-

out the scientific world, stated many years ago to the present writer that posterity would look back upon our age as the cellulose age. Among the more important cellulose derivatives, industrially speaking, may be mentioned viscose. Viscose (the discovery of which may justly be attributed to Mr. Cross) is the basis of one of the most successful processes for the manufacture of artificial silk. This industry, which is, comparatively speaking, of recent origin, has progressed by leaps and bounds. The battle between wood and cotton as a raw material for the production of viscose has been fought out, and has resulted in the victory of cotton—apart from which, the available supplies of wood pulp in relation to the demand for news and other cheap papers—are rapidly becoming smaller and smaller.

For the production of viscose, length of staple in the cotton fibre is of secondary importance. The primary consideration is cleanliness and freedom from the extraneous matter always found in cotton seed to a greater or less extent. It is a feature of a recently introduced machine (referred to some months ago in these columns) that the removal of these residual cotton fibres from the cotton seed is effected in a manner which avoids the intrusion of the dirt and debris present in the cotton seed into the fibre product delivered by the machine. Thus a very large supply of suitable material for the production of viscose is rendered potentially available, and active steps are now being taken for the establishment of these machines in Great Britain, the United States, India, and in other cotton growing countries.

In view of the great improvement in the processes involved in the manufacture of artificial silk which have been introduced from time to time in recent years it does not seem unreasonable to suggest that, given efficiency of organization and management, it should be practicable to produce an artificial fibre from the residual fibres of cotton seed which would form an efficient substitute for staple cotton, and compare favourably in price, at least, with that of superior cottons.

It may be that the next generation—even perhaps the present generation—will be clothed in artificial silk shirts and other garments now spun from cotton.

Scientific and Industrial Research.

The following is extracted from the *Journal of the Textile Institute* for November, 1921:—

The Report of the Committee of the Privy Council for Scientific and Industrial Research, for the year 1920-21 (H. M. Stationery office, 1s.), like its predecessors, provides a most comprehensive and informative review of the entire field of activity of organized research. The textile industry as a whole figures largely in the report, as might be expected, and whilst a summary of the references to the activities in this important sphere may indicate the extent of the ground which is being covered, yet all who are interested in the vast movement of organized research should not fail to read the entire report if only for the purpose of securing comparative information as to activities in respect of the various industries affected, for it is to be remembered that industries are more or less interdependent. The report of the Committee of the Privy Council is a brief statement followed by the more exhaustive report of the Advisory Council.

The Committee points out that, in addition to the limitation of the estimates for the current financial year, they have caused to be prepared, in accordance

with the Government instructions, preliminary estimates for 1922-23 showing a saving of 20 per cent of the estimates for the current year. The curtailment of resources, due to financial stringency, is causing both the Committee and the Advisory Council very great anxiety, and the limitation is certain to involve postponement of a certain amount of research work. For the year 1921-22, the estimates were reduced by 17 per cent.

The Committee specially mentions the important work undertaken during the year by the Fuel Research Board, a long series of experiments on the effect of steaming various coals in vertical gas retorts having been completed and a report issued. The expenditure on the Fuel Research Station during 1920-21 was nearly £50,000, whilst elsewhere than at the station the expenditure £3,683, but over £3,000 was received by way of sale of by-products. The estimates for the coming year show an expenditure, after receipts, of about £55,000.

The number of industrial research associations now approved by the Department is twenty-six, and during the year ending 31st March 1921, grants to associations amounted to £74,557. The balance of the Million Fund then remaining unexpended was £903,205 and of this sum a large percentage has already been earmarked for associations already formed. The total expenditure on special grants in aid of scientific investigations amounted to £20,912 and provision is made amounting to nearly £9,000 for their continuance during the current financial year. During the academic year 1920-21 one hundred and thirty-two allowances to students were made, seventy grants to research workers to undertake independent research, and forty-three grants to scientific workers to enable them to employ assistance or procure equipment.

The expenditure out of the vote of the Department during 1920-21 was £462,650 made up of £373,821 from the Exchequer, £38,022 from interest of the Million Fund, and £58,806 from fees for tests, etc. The full total of expenditure of the Department was £552,219.

The report of the Advisory Council covers from 1st August 1920, to 31st July 1921. Referring to the financial aspect of the work, it is stated that scientific research is the main, if not the only, source of fresh productivity in industry, and it is only by increased productivity that the world will find a way out of its present economic difficulties. Any reduction in the expenditure by Government on research which is considered by responsible men of science to be needed will react most rapidly, at the point where we are nationally weakest—on the number (not the quality)—of competent investigators coming forward. The effect of even a temporary set-back will be long continued and may be lasting. It is certain, the report adds, that unless increased provision is made for the Department in future years it will be impossible successfully to carry out the duties of co-ordination laid upon it by the Government in the interests of economy.

Referring to the British Cotton Industry Research Association the report says the Association has begun investigations into the structure of cotton fibre; the effects of bacteria in causing deterioration of cotton and cotton goods the constituents of raw cotton; and the moisture content and drying of cotton, defective sizing, the variation of tensile strength with twist, measurement of the regularity of yarn, strength of yarns under a varying stress. Reports on these problems have not yet been issued, for want of adequate laboratory accommodation has considerably hampered the work.



Topics from Departmental Reports.



Standardization of Weights and Measures.

The Government of India have passed orders on the report of the committee which was appointed in October, 1913, and which submitted its report in July, 1914, on the question of feasibility of introducing uniform weights and measures throughout India. The fact that the question was not dealt with during the last seven years was among other considerations due to the outbreak of war when any radical change in measures and weights would have, at any rate, temporarily dislocated trade. The Government of India make a clear distinction between weights and measures from the point of view of need for standardization.

Measures of capacity especially dry measures vary enormously from province to province and even from district to district. Moreover, discrepancies in measures of capacity do not cause so much practical inconvenience as discrepancies in weight, while their influence on inter-provincial and foreign trade is negligible. The Government of India therefore, propose, subject to restrictions imposed by the Government of India Act and Devolution rules, to leave it for the present entirely to the local Governments to take such action as they think advisable to standardize dry and liquid measures of capacity within their provinces. Similarly, it is not proposed to adopt all-India standards of length or area.

As regards weights the Government of India have decided in favour of the Indian railway standard which was recommended by a majority of the Weights and Measures Committee and which had also received unanimous support of the local Governments. (The railway standard is one maund equal to 40 seers and one seer equal to 80 tolas or 61 chhataks.) At the same time the introduction of the desired change throughout India presented serious difficulties. For the present the Government have accepted the resolution by the Council of State on the 23rd September asking Government to declare themselves in favour of an ultimate adoption in India, excluding Burma, of a uniform system of weights based on the scale now in use on railway.

The order proceeds:—The Government of India are not prepared to allow the intrinsic merits of the railway system to weigh against strong general arguments against compulsion and they have therefore decided to limit their action (1) to indicating a preference for the railway system of weights and (2) to maintaining standard weights at the chief presidency towns. The subject of weights and measures is now provincial with reservations. The Government of India shall legislate as regards standards. The Government of India do not propose to repeal the only Act regarding standardization, the Indian Weights and Measures of Capacity Act of 1871, nor to introduce at present any new measure prescribing all-India measurers of weight or capacity. Their opinion is that local Governments in exercise of the power conferred upon them by Devolution Rules should take such executive action as they can to edu-

cate public opinion in favour of a standard maund and seer by publicity work, by adoption in school curricula and by any other suitable measures. The municipal bodies might be encouraged to frame bye-laws adopting this standard and local Governments might maintain standard weights at their respective capitals and at important trade centres. Where a local Government considers that provincial standardization by law is feasible the Government of India will have no *a priori* objection to such legislation on the usual understanding that they will be consulted as to the actual form which such proposed provincial legislation is to take and thus such legislation will not be introduced without obtaining previous sanction of the Governor-General. If subsequently opinion develops strongly in favour of Imperial standardization of weights, the Government of India will be prepared to undertake such legislation but at present they consider that any such step would be premature.

With regard to Burma, the Government of Burma have generally accepted the recommendations of the committee summarised in chapter 7 of their report except in respect of measures of dry capacity and have submitted proposals for legislation with a view to giving effect to them. The Government of India in approving these proposals have suggested that necessary legislation might be postponed until the reformed legislature comes into existence in that province.

Cotton Experiments in Madras.

The following particulars relating to experiments carried out by the Cotton Specialist in the Madras Presidency are taken from the Report on the Operations of the Department of Agriculture, Madras Presidency, for the official year 1920-21:—

Most of his work during the year was done on the Cambodia crops grown on the Central Farm at Coimbatore. It was decided that he should give his first attention to the improvement of Cambodia cotton and that with regard to other kinds of cotton his duties should be confined to advising and guiding the work of the Deputy Directors of Agriculture of the several circles in which work on cotton is being done. He first set himself to examine the details of the variations to be found in the Cambodia cotton plant. Among other things he found the most important fact that, as in the case of herbaceous cotton, there was an apparent incompatibility between good length of lint and high weight of lint per seed. This means that for two strains producing the same number of seeds, the one with the longest lint produces the least amount of cotton. This is an unfortunate fact which, if found to prevail universally, sets a limit to the production of types combining high yield with good length of cotton. However, this does not by any means mean that improvements over existing crops are impossible. The Cotton Specialist has set himself the preliminary aim of producing a type with a length of lint not less than 25 mm. say 1 inch, and giving the heaviest yield per

acre that is possible. He took over the single plant selections of cotton which had been produced at Coimbatore during the last two years, but found unfortunately that a great number of these selections were mixtures of the produce of two or more plants. However, forty of the best single plant selections were sown and detailed records kept of eleven separate characters for each of twenty plants in each selection. Such characters are the height of the plant, the size of the boll, the type of the branch, whether attacked by the stem weevil or not, etc., etc. It is well known that cotton plants shed a large number of their flowers and bolls before the latter are ripe and so yield much less cotton than they would if every flower produced a ripe boll. Consequently, a detailed record was kept of such shedding of flowers and bolls in a number of plants with a view to selecting such plants as shed least. In view of the importance of combining, if possible, high yield per acre with good length of lint, attempts were made to cross Cambodia plants with Indicum No. 14 and Roseum No. 128, but these proved failures this year. In the laboratory investigations were carried out as to the best method of recording the characters of selected plants. In cotton selection work it is necessary to keep a record of such characters as "average length of lint," "range of variation of length of lint fibres," etc., for each selected type. It is obvious that methods which will produce reliable and consistent figures for such characters with the least possible number of measurements will enable a much greater volume of types to be usefully examined and classified by a given staff than could be done by less efficient methods. The Cotton Specialist has been able to work out a method by which it is only necessary to measure five seeds per plant in order to arrive at an accurate figure indicating average length of lint.

Brazil's Coffee Industry in 1920-21.

The Santos crop for this year (1920-21) is estimated at about 8,000,000 bags, states the Commercial Secretary to H. M. Embassy at Rio de Janeiro in his Report on the Economic and Financial Conditions in Brazil (H. M. Stationery Office). The world's visible supply of coffee on 1st October, 1920, was 2,600,000 bags less than the average on that date during the previous three years. The great frost in June, 1918, did an enormous amount of damage to the coffee plantations in the State of Sao Paulo. In 1919 the crop of coffee harvested probably did not amount to more than 2,000,000 bags, the balance, *viz.*, 2,164,408 bags, being coffee held over from the previous year. The trees have borne heavily in 1920-21, more especially those growing on the higher country which were not very seriously damaged by the 1918 frost. The 1921-22 crop is estimated at about 6,000,000 bags. Considering the statistical position and a short crop in prospect it seems inevitable that prices must rise.

The value of the coffee export trade for the year 1920 was £52,800,000, as compared with £72,600,000 for 1919, the principal market being the United States.

INCREASED COST OF PRODUCTION.

The cost of production has risen considerably during the past few years. It is estimated that in 1913 it cost about 22 milreis to produce a bag of coffee, whereas at the present time it probably costs 40 milreis per bag.

LABOUR PROBLEMS.

Throughout the whole coffee growing area there

is a great shortage of labour, largely due to the cessation of immigration during the war, with the result that coffee plantations are by no means fully colonised. Various attempts are being made to transport labour from the States of Ceara, Para, Amazonas, and other northern States, as well as from the surplus populations of big cities like Sao Paulo, to the coffee growing belt to remedy the dearth of colonists. So far, however, the results have been far from satisfactory, as the quality of such labour is not usually good, while such attempts have been made only on a small scale. The only solution of the labour problem seems to be the immigration of agriculturists in large numbers from Italy, Spain and Portugal.

OUTLOOK FOR THE FUTURE.

In spite, however, of all obstacles such as labour shortage, high costs, etc., the situation from the coffee grower's point of view may be regarded as hopeful, and there seems to be no reason why the coffee fields in the State of Sao Paulo should not fully recover from the disastrous effects of the frosts of June, 1918, and the grower obtain a fair annual return on his employed capital. With only a moderate 1920-21 crop this year and a smaller one estimated for 1921-22, there seems to be little probability of any serious fall of prices of the Santos market.

It may be of interest to note that the year from the coffee grower's point of view (known as the agricultural year), begins on 1st November and closes on 31st October, while Santos coffee merchants and exporters begin their year on 1st July and end on the following 30th June, their statistics being compiled accordingly.

Japanese Silk Production.

A Report published by the Japanese Sericulturists' Association indicates a tendency in the Japanese silk industry to increase its production again on strength of the unexpectedly good business conducted in the cocoon market. Filatures have also increased their capacity by 2.9 per cent.

The Japanese Sericulturists' Association Report is based on local reports collected up to 27th June. It states that the estimated capacity of reelers at the beginning of the summer season was up to 301,677 pans, against 294,150 pans at the same time last year. There is an increase of 7,527 pans, or 2.6 per cent. The total capacity of the Japanese silk reeling industry is, all included, an increase of 8,457 pans, or 2.90 per cent.

The quality and quantity of this year's spring cocoons are as a whole excellent, although locally a measure of deterioration has been noted, says the report. In all prefectures except Nagasaki, Wakayama, Kagawa, Kochi and Miyazaki the crop is normal or better than normal, the quality being also generally better than normal. Even in such late places as Yamanashi or Shiga prefectures the crop has not been very large, but the result of reeling off has been found very good. The quantity of silk produced is also very large. This can be attributed to the improvement of egg cards, the plentifulness of mulberry leaves, and better care having been taken of young worms.

Reelers find the supply of male hands quite plentiful, but in many districts they are troubled with the poorer supply of female labour. The Report attributes this shortage in female labour to the increase in reelers' own capacity and the fact that the industry wants skilled labour. Especially in Fukui, Nagano, Aichi, Yamaguchi, Kagoshima, Tokyo, Saitama, and some other prefectures the supply of female labour

has been 10 to 25 per-cent short as compared with the capacity of filatures.

Not only reelers but sericulturists have been inclined to increase their production, sericulturists having been very much encouraged by the excellent price paid for spring cocoons. The Report states that as a rule rearers of summer worms are much less numerous than rearers of spring worms owing to the difficulty of dividing labour between the growing of mulberry trees and caring of worms and ordinary farm work, but this year sericulturists generally are very zealous in their brushing of summer egg cards partly because they have still mulberry leaves on hand, and partly because they have obtained unexpectedly good prices for spring cocoons.

Bengal Agricultural Research.

In the course of a Resolution on the Report of the *Department of Agriculture, Bengal*, for the year 1920-21, the local Government observes:—The *research work* of the department is divided into the Fibres, Botanical and Chemical sections. The success of the *Kakya Bombai* variety of jute is well-known. But two new races, R 85 and D 154 are expected to prove superior to *Kakya Bombai* as they give a somewhat better yield and are immune from the attacks of *chlorosis*. This disease is now being investigated by the Fibre Expert, in collaboration with the economic Botanist. The Botanical section is testing three new varieties of *aman* paddy and is investigating the problem of early paddies for the high lands of Bankura and Birbhum. Cotton is also receiving attention, but experience has shown that long-staple cotton as a rains crop is not likely to be a commercial success in Bengal. Experiments with cold weather cotton will be initiated this year. In the Chemical section, work on the soil survey of the province has had to be curtailed owing to shortage of staff, but the analysis of soils from the new Government farms has been carried out, and very important work in connection with tobacco has been started. This includes an investigation into the manuring of the crop and a study of the various methods of curing and fermenting the leaf. It is the aim of Government to provide every district with an agricultural farm where new varieties of crops and manures will be tested and adapted to local conditions and which will form a centre for all the agricultural work of the district. It has been agreed that there should also be a central experimental station in each division at which experimental work of a high order can be conducted; and it is recognized that the Department is seriously handicapped at present in its experimental work by having only two such stations at Dacca and Chinsura. The provision of additional experimental stations must, however, await an improvement in the financial position. Meanwhile, as a temporary measure, arrangements are being made to conduct some experimental work on the Rajshahi Farm. It is a satisfactory feature to report a considerable increase of public interest in agricultural matters and in the work of the department. An indication of this is the remarkable demand for departmental seed. In the Dacca Division, for instance, applications were received for 5,000 maunds of *Kakya Bombai* jute seed against an available supply of 800 maunds. There was also a keen demand for seed of the *Kataktara* and *Indrasail* varieties of paddy. It is obvious that the seed which the district farms will be able to supply will be quite insufficient to meet the needs of the cultivators. A scheme has

therefore been drawn up for utilizing private agencies for the propagation and distribution of departmental seed. The central experimental stations will supply seed to the district farms. These in turn will distribute it to private farms established through the agency of zamindars, khas mahals, Court of Wards' estates and co-operative agricultural associations. The seed will be propagated for a further period in these farms before distribution to the cultivators. Satisfactory progress in the organization of these private farms has already been made. The demonstration work of the Department is by no means confined to jute and paddy. Many varieties of sugarcane from all parts of the world have been tested, and the *Yellow Tanna* variety, which has proved itself pre-eminently adapted to the conditions of Bengal, has achieved a wide popularity. Every effort is being made to increase the supply of seed of this variety to meet the large demand which exists. Tobacco is also an important item in the demonstration programme, and the cultivation of the Sumatra variety has been rapidly extended in Rangpur. Other crops which are receiving attention include groundnuts, wheat and potatoes, and the use of manures is also being popularized by the demonstrations of the department. The Sericultural branch of the department continued to do important work during the year under review. The demand for seed cocoons greatly exceeded the supply. Owing to a shortage of the mulberry crop which was affected by drought and to an accidental outbreak of muscardine at one of the nurseries, the total receipts from the nurseries amounted only to Rs. 77,286 as against Rs. 84,185 in the previous year. In spite of this, it is estimated that the department supplied 29 per cent of the total seed requirements of the province. The increasing demand for sericultural education is an indication that the cultivators appreciate the value of the work that is being done by the department.

Topics in the Journal.

Journal of the Ministry of Agriculture, February 1922.—Some aspects of Agricultural Education in the U.S.A., by L. K. Elmhirst, M.A. (Cantab.), B.Sc.

Agricultural Journal, Co-operative consolidation of holdings in Punjab by H. Calvert, I.C.S.

Indian Economic Society, December 1921.—The gold exchange standard (Ash remedy for the present exchange debacle in Europe.)

Mysore University Magazine, December 1921.—Co-Education, by H. S. Hensman, M.A.

Young men of India, February 1922.—Vocational Education, by Mr. W. Fyfe.

The Educational Review, January 1922.—The Historic Basis of Indian Education, by Mr. John M'Bhaktul, B.A., B.T.

The Local Self-Government Gazette, January 1922.—A Swiss Municipality, by A. Master, I.C.S.

The Modern Review, January 1922.—The Osmania University, by Rai Bahadur Gyanendranath Chakravarty, M.A., LL.B.

Journal of the Royal Society of Arts, December 1922.—Proceedings of the Society, the preservation of stone, by Noel Heaton, B.Sc.

Mysore Economic Development Board.

PROGRESS REPORT.

Board of Industries and Commerce.

The following is a summary of the Proceedings of the ninth meeting of the Board of Industries and Commerce, held in the Chambers of the First Member of Council, Public Office Buildings, Bangalore, on Saturday the 26th November 1921, commencing at 3 P.M.

Present.

A. R. Banerji, Esq., M.A., I.C.S., C.S.I., C.I.E.
(Chairman)

Members.

1. The Director of Industries and Commerce.
2. The Agent, Mysore Railways.
3. The Conservator of Forests.
4. The Deputy Director of Commerce.
5. Rajasabhabhushana Dewan Bahadur
K. P. Puttanna Chetty, C.I.E.
6. B. Usman Khan, Esq.
7. Singri Nanjappa, Esq.
8. C. Narasimhaiya, Esq., B.A., B.L.
9. Sylvester Pais, Esq.
10. C. Narayan Chetty, Esq.
11. M. Venkatasubbiah, Esq.
12. C. Subba Rao, Esq.
13. B. K. Garudachar, Esq.
14. Md. Abbas Khan, Esq.
15. H. Basave Gowda, Esq.

Secretary.

M. S. Ramachandra Rao, Esq., B.A.

The Chairman, before beginning the meeting, welcomed the new Director of Industries and Commerce, Mr. P. G. D'Souza. Mr. K. P. Puttanna Chetty suggested that the Board would feel obliged if Mr. D'Souza could give a short account of his tours in Europe and America and advise the members as to the lines on which the work of the Board might be developed.

Mr. P. G. D'Souza responded with the following observations:—

"Sir, the conditions in the countries I visited in regard to industrial development are very different from those prevailing here. The industries in those countries are already organized on a very large scale and their problems consist of finding out how to further reduce the cost of production with a view to their being able to compete with their sister countries.

"England organized most of her industries at a time when she had no serious competition to contend with. As countries that had entered into the industrial field later on, such as America and Germany, had to organize their industries with a view to enable them to compete successfully with England, they instituted large scale production in a much larger degree than England.

"In America there was a tendency for larger industrial organizations to be grouped together in Trusts, and special laws have had to be passed with a view to prevent these Trusts abusing the advantage of monopolies they have gained to the detriment of the local consumers. While the American Trusts were allowed to regulate prices for export they were

not permitted to do so in regard to internal demand.

"In Germany they have what is called the Cartel System which is another form of monopoly. The German industry is organized on what is known as the "horizontal" and "vertical" system—the industries dealing with raw materials forming one group and the industries dealing with the finished products another group. They regulate the prices, share in the results of scientific investigations and are able to carry on their industries in a manner that enables them to withstand any competition.

"England was also feeling the need of better organizing its industries on somewhat similar lines and recent attempts have resulted in a Federation of British Industries.

"In America, industrial development has been facilitated by a system of tariffs by which practically all manufactured commodities from other countries are automatically excluded from the market unless they can be sold at a price not lower than that of the American manufacture.

"America, which hitherto concentrated its attention on its home market, was also feeling the need for a large development of its export market but owing to the high value of the Dollar it could not sell commodities at prices that would compare with those at which the goods were offered by other countries like Germany where the currency was depreciated.

"Though India possesses raw material necessary for all industries, it would not be possible to develop immediately the industrial enterprises on a large scale for purpose of export. What was needed at present was the development of such industries as would meet local demands. Large industrial organizations in other countries were also prepared to give the benefit of their expert help and advice to other countries where similar industries could be developed under advantageous conditions on a profit-sharing basis.

"This system has been greatly adopted in Japan. I had a discussion with regard to some of these organizers controlling patents and they were quite prepared to participate with local industrial developments.

"The unsettled conditions in India and other parts of the world were serving as a discouragement. It is very difficult to say to what extent the tariff system can be applied to India. The large increase of wealth due to industrial development has led to the multiplication of transport and other facilities in these countries and other conveniences of life. In Germany, for instance, every village has its own tram service. The avenues are in many places planted with fruit trees. Afforestation has been carried on on an extensive scale. Intensive cultivation was one of the chief sources of wealth of Germany.

"One of the chief reasons why Germany has been able to continue industrial production on an unprecedented scale, was that the war has not affected these industries. In fact, many of them have orga

nized at present on an ever larger scale than during the war. Labour is comparatively cheap and the German labourers are more amenable to discipline and there are fewer strikes.

"The direction in which we should take action, therefore, is to develop such industries as would enable us to utilize our own resources in providing for the requirements of our people. In the case of industries requiring some special technical knowledge and which are run by large organizations that have practically monopolised the industries, the development of such industries can only be undertaken in the same manner as has been done in Japan. These are chiefly Electro-Chemical Industries and Special Industries relating to the manufacture of metals."

Mr. K. P. Puttanna Chetty said that Mr. D'Souza had collected a fund of information and that his remarks deserved to be listened to by a larger audience. He thanked him on behalf of the Board for readily complying with their request.

The Chairman next enquired of the members from the Districts to briefly state any new lines of activities undertaken by the local bodies.

CULTIVATION OF LAC.

The Government letter No. I. C. 2843-5—I. & C. 19-20-11 dated 10th November 1921 calling for the views of the Board on the subject of expanding the propagation of lac and putting the product to industrial uses was then considered.

The Conservator said that he would be able to give more information at the next meeting. In the meantime, he wanted to sound a note of warning against proceeding too fast in regard to lac propagation and manufacture of shellac, as the cost of lac had gone down enormously during the last 4 years. They should therefore be very careful about developing this industry owing to the too frequent and sudden fluctuations in the lac trade.

The Director of Industries and Commerce said that in America and in England the leading Gramophone Manufacturers were using lac for gramophone records and that they would be willing to enter into agreement for purchasing our lac for a period of 10 years.

Mr. B. K. Garudachar said that in the Indian Institute of Science Messrs. S. Mahdi Hassan and Srinivasiah were carrying on experiment in the propagation of the lac on *Thogari* leaves. It would be better to develop lac propagation as a Home or Cottage industry. He added that Mr. Mahdi Hassan was a student from the Hyderabad State who had given 6 years' study exclusively to lac industry and that it would be useful to enlist his services in working out the scheme.

The Conservator of Forests said that the lac could be got propagated on any tree and that it did not require any particular tree but that it thrived best on the *Jalari* tree in Mysore.

The Chairman said that it would be useful to enlist the co-operation of Dr. Fowler in the matter as he has expressed his willingness to render any assistance that may be required of him in this connection. Dr. Fowler had suggested that a preliminary meeting might be held. The Chairman said that a special committee consisting of the following gentlemen might go into the whole question and submit practical proposals on the several points raised in the Government letter:—

1. The Conservator of Forests.
2. The Director of Industries and Commerce.
3. The Secretary, Board of Industries and Commerce.
4. Dr. Coleman.

5. The Revenue Commissioner (Convener).

6. The Secretary, Board of Scientific Advice.

7. Prof. Usher, and

8. Dr. Fowler.

They might be able to indicate the possibilities of lac propagation and to state whether it would be paying to establish a Shellac industry in the State. On receipt of their report the subject might be further considered.

Mr. K. P. Puttanna Chetty asked what had become of the two men who were sent from Channapatna to Mirzapur.

The Secretary said that they had returned and were conducting the work on a small scale and had succeeded in producing some fine varieties of lac products. (Specimens were shown to the members.) He said that the men had applied for a loan of Rs. 1,000 without interest for starting a small concern in Channapatna.

The Chairman asked the Conservator whether there was any objection to sanction the loan.

The Conservator said there was no objection and that the loan asked for might be given.

The Director of Industries said that he had received a letter from Mr. Mahdi Hassan in regard to lac propagation.

Mr. Usmankhan said that there were many persons who were manufacturing lac in Cantonment and other places and regretted that no help was rendered to them.

The Chairman said that if they came forward, the Board would consider their case.

The Chairman then suggested that Rs. 500 might be given to the two men who returned from Mirzapur.

The Conservator said that it was not desirable to cut down their demand and that the full amount of Rs. 1,000 asked for might be given as loan, to be recovered without interest in easy instalments.

The Chairman enquired whether the Department could not conduct the experiments by advancing money from time to time to the men interested in the trade.

The Conservator of Forests said that everything was done by the Department at first in propagating lac. It was only recently that they leased out large areas to private men for lac propagation. He remarked that in most cases the men to whom it was leased out could not make any profit out of it. He added that this year one of the private concerns had made a good start and that he was watching the progress.

The following resolution was then recorded:—

(a) That a special Committee consisting of the 8 members referred to below be constituted to prepare a preliminary programme of work in regard to lac industry and the subject considered again after their report was received:

1. The Revenue Commissioner (Convener).
2. The Conservator of Forests.
3. The Director of Industries and Commerce.
4. The Secretary, Board of Industries and Commerce.
5. Dr. Coleman.
6. The Secretary, Board of Scientific Advice.
7. Prof. Usher.
8. Dr. Fowler.

(b) That Messrs. C. A. Arasa Jetty and Dasa Jetty be given a loan of Rs. 1,000 to be repaid in 5 equal annual instalments, without interest, in order to enable them to start a small refinery in the State.

MALNAD ARECANUT DEPUTATION.

Mr. C. Subba Rao said that the Shimoga people had captured the arecanut market completely, that

Birur was losing its importance, that the Bellary merchants themselves have established a few branches in Shimoga and that there was no further need for Government to take any action in the matter.

Mr. B. K. Garudachar pointed out that the Mysore areca would not suit the Bombay market.

The Director of Industries agreed with the above remarks.

Mr. C. Narsimhiah pointed out that the areca growers in the Malnad were used to the advance-system and that the money generally taken by them would be more than the quantity of areca supplied. It was therefore useless to attempt to solve the indebtedness of the Malnad Arecanut Growers.

Mr. Sylvester Pais was also of the same opinion.

The Chairman said that it was not possible for Government to undertake financing the scheme to any extent and that the Syndicate proposed by Mr. Hoskoppa Krishna Rao would be in the shape of a trust. He said that the Land Mortgage Bank when established might deal with the indebtedness of the garden owners. In any particularly bad year the Government would surely render help. After further discussion the consensus of opinion was that the areca-trade was fairly established in the State and did not require any help from Government and that it was not in the province of Government to undertake to displace the middleman Sowcar or to relieve the indebtedness of the garden owners which should be done by co-operative agencies or by Land Mortgage Bank.

Resolution 2.—Resolved that no action need be taken by Government on the report of the Malnad Arecanut Deputation.

ELECTRIFYING RAILWAYS.

(a) That electricity be substituted for fuel in Mysore Railways at least for the Bangalore-Mysore line for the present.

Mr. Narayana Chetty was of opinion that trains might be run by means of electric power and that there was ample scope for trying the experiment at least on the Bangalore-Mysore line in the first instance.

Mr. K. P. Puttanna Chetty said that it would duplicate the capital required.

The Agent, Mysore Railways, said that though they had cheap power, it would cost too much to adopt the suggestion of the member as it would mean the alteration of the entire rolling stock and locomotives.

The Chairman said that it was a very enlightened and advanced proposition and suggested that the subject might be brought up at the next meeting when Mr. Forbes would be present. He said that Mr. Forbes was of opinion that the electrification of railways could be done and that he was very enthusiastic about it. He therefore asked Mr. Narayana Chetty to get the support of Mr. Forbes before he brought the subject again to the Board.

Mr. Usmankhan said that throughout the length from Closepet to Kankanhalli there was the river as also the electric power main line passing along and that it should be possible to instal electric irrigation pumps all along the route.

The Chairman said that this proposition might be brought up separately and that the same might be discussed at the next meeting after giving due notice to the members.

SALE OF SANDALWOOD OIL.

(b) That Agency for the sale of sandalwood oil in India and foreign markets be entrusted to local merchants.

Mr. Narayana Chetty said that he was quite ignorant of the details of the sandal oil business but that he was given to understand that the Government have agents in England and that they themselves were dealing with them. He wanted to suggest that the work could be entrusted to the local merchants. The merchants would make arrangements for the sale of oil by appointing their own agents in foreign countries and thus they would be able to help Government. He said that he had also consulted the Bombay merchants and that they too were of the same opinion.

Mr. K. P. Puttanna Chetty said that the commercial side of the business might be managed by private enterprise. He understood that there were offers from private firms and remarked that Government might consider the desirability of giving the agency to them if they could push the business in foreign markets.

The Chairman said that the proposition was rather vague. The business was a difficult one. It required a lot of information and experience if one had to find out outside markets. He enquired to what kind of local merchants Mr. Narayana Chetty wanted to entrust the agency. Sandal oil was entirely a produce sold in foreign countries. Whether there was any firm in Mysore having established connections with foreign markets was doubtful. He said that it was a business involving very large capital and business organizations. He further said that supposing it was given to a local merchant he thought that he would, under the present circumstances, at once sub-let it to a Bombay merchant or foreign firm in which case the profits would be earned by outsiders.

Mr. K. P. Puttanna Chetty said that they could organize private enterprise in the State itself and take up this business without letting it into the hands of foreigners.

Mr. Narayana Chetty urged that information regarding the working of the factory, quantity of oil produced, cost of production, etc., might be furnished to him.

The Chairman said that it was not possible to give him the information, as it was of a confidential nature.

The Conservator said that the members should study the subject carefully and then bring a definite proposition.

The Chairman suggested that the proposition might be accepted if the members agree to revise it somewhat as follows:—

“In the opinion of the Board the services of any firm or syndicate in Mysore capable of dealing with the commodity in foreign markets, may be utilized for the disposal of the sandal oil manufactured in the factory either in part or whole, in India or any foreign country.”

Resolution 3.—The suggestion was agreed to and the proposition carried.

ALL-INDIA SUGAR COMMITTEE REPORT.

(c) That the recommendations of the All-India Sugar Committee concerning Mysore State be widely published to the public in English and Kanarese in the form of leaflets.

The Chairman said that the All-India Sugar Committee's report was going to be brought up at the next meeting and that it might therefore be deferred for the present.

Mr. Usmankhan wanted to know what had become of the applications received from some firms some time back to establish a Sugar Factory in the State. He wanted that the applications might be

put up at the meeting for the information of the members.

The Chairman said that this was not necessary as all the applications were carefully gone through by the Sugar Sub-Committee.

Resolution 4.—Resolved that the subject be brought up again at the next meeting of the Board and the copies of the All-India Sugar Committee reports with reference to Mysore be circulated to the members sufficiently in advance in order to enable them to study the subject carefully.

MANUFACTURE OF STRAW BOARDS AND BROWN PAPER.

The Chairman said that a scheme for the manufacture of straw boards and brown paper had been prepared by Messrs. Bertram & Co., but that Government was not in a position to start the factory now and suggested that the information collected might be notified by the Industries and Commerce Department and if any private persons come forward with necessary capital to start the industry, Government might consider the nature of concessions that may be offered to them.

DEVELOPMENT OF MINERAL INDUSTRIES.

The Chairman said that the proceedings of the Sub-Committee meetings for the Mineral and Joint Stock Companies might be circulated to the members again and the subjects reconsidered at the next meeting.

Mr. K. P. Puttanna Chetty desired that Mr. P. G. D'Souza's opinion might also be obtained in regard to subjects Nos. 5 and 6 and circulated to the members for information beforehand.

It was suggested that the next meeting of the Board might be held in the 3rd week of January 1922 which was agreed to.

Disbursement of Pay to Village Elementary School Masters.

The following Order No. 1372-4—Edn. 162-21-2 Dated 27th September 1921 has been issued by the Mysore Government:—

With a view to avoid delay in the payment of salaries and grants to school masters and also to relieve the Shekdars of the work of disbursing these amounts, a system was introduced in Government Order No. 8529-39—Edn. 33-18-3, dated the 8th March 1919, under which direct payment at the Treasury is made in the case of salaries and grants of teachers of Village Elementary Schools within a radius of 10 miles of the Taluk Headquarters, payments in other cases being arranged to be made by postal money orders. Subsidiary and detailed instructions have also been issued by Government in the matter which provide that the Assistant Inspectors should prepare two consolidated statements, one for grants to Aided Village Elementary Schools and the other for salaries to teachers, and forward them to the Treasuries concerned for encashment and payment. The money order forms in the case of salaries and grants to masters of schools beyond the prescribed radius of 10 miles are also duly filled in by the Assistant Inspectors and sent to the Treasuries along with the bills, one money order being made out for each school. After auditing the bills, the Treasury authorities arrange for direct payments in concerned cases after obtaining necessary acquittances, and for remittance by money order in other cases, the money order acknowledgments being attached to the acquittance roll kept in Taluk Offices.

This system has been acknowledged to be an improvement on the previous procedure, but complaints have not ceased as regards the delay that still exist in the disbursement of salaries and grants. Various suggestions have been made in this connection to improve on the present system and the following are a few of the important ones.

(i) That direct payment may be restricted to the teachers of schools within a radius of five miles.

(ii) That for the contingency of the Headmaster being away at the time the money order arrives and the consequent delay in the disbursement of salaries to other teachers whose pay may also be included in the same money order a separate money order may be issued in the name of each teacher instead of a single money order for a whole school.

(iii) That the Range Officer may himself draw the money and remit it direct to the masters obviating delay on the part of the Treasury.

As regards the first two suggestions above, Government observe that apart from the increase of scrip-tory labour which they involve in the offices of Assistant Inspectors in having to prepare a large number of money order forms, and the increase of work thrown on Taluk Offices in having to watch the receipt of a large number of acknowledgments, the commission payable on the money orders would also become unduly high quite disproportionate to any additional facility that the adoption of the suggestions may bring about. They are therefore not in favour of adopting either of these suggestions.

With regard to the third suggestion, they consider that the object can as well be achieved by adopting the system ordered in the Government Order dated the 8th March 1919 by necessary and proper check over the various authorities concerned in the scheme.

With a view therefore to ensure proper and efficient scrutiny over the work of Assistant Inspectors and the Taluk Officers in this matter, the Government have recently approved of the proposal of the Inspector-General of Education to prescribe a monthly return in the form appended showing the dates on which pay bills were prepared and sent to the Treasury by the Assistant Inspectors and on which salaries were drawn and disbursed. Government consider that with the safeguards the scheme already sanctioned may be given a sufficiently long trial before any changes therein are contemplated. [Form not printed here.—Ed. M. E. J.]

U. P. Board of Industries.

A meeting of the Board of Industries was held at Cawnpore on the 21st January. The Board made a grant of Rs. 2,000 (non-recurring) towards tools and equipment for the Industrial section of the Arya Samaj Orphanage, Bareilly, and recommended that Government should give half the cost of land and buildings and should give half recurring cost of staff and contingencies. A non-recurring grant-in-aid of Rs. 333-5-4 was made to the S. P. G. Mission, Roor-kee, and of Rs. 4,000 to the Agra Pencil Factory. It was resolved to reject the application of a glass apprentice for a scholarship. The Board did not think it practicable to advise the Government to guarantee a few posts to the passed students of the Technical Schools. The Board resolved to advise the Government that there was no necessity at present of having a Labour Bureau, or a Labour Commissioner in these provinces. A note on the alternative methods of securing the inspection of boilers and factories in the United Provinces, was considered

and as there was weighty and equal opinion ranged on either side, it was decided to submit to Government the record of the proceedings. As for the best method of imparting practical training to students of the Oil Department of the Technological Institute, opinion was divided, but the majority were in favour of working a demonstration factory annexed to the Institute coupled with an arrangement for insuring factory-scale training in a private oil concern on the basis of a *per capital* subvention. The code of regulations and prospectus of the Government School of Needle-work, Lucknow, was approved. It was resolved to advise the Government that the Farrukhabad Art Fabric Printing School be closed and that in its place two scholarships, one for designing, etc., tenable at the School of Arts and Crafts and the other for learning block printing, etc., tenable at the Cawnpore School of Dyeing and Printing should be established. The proposal to recommend the employment of an expert cutler was negatived. The proposal about the appointment of a Professor and a lecturer on oil chemistry was postponed for further consideration as part of the more comprehensive scheme of the staff for the Technological Institute. The modification of the Board's powers of spending the Rs. 15,000 placed at their disposal and the powers of voting, etc. of absentee members were noted. The action taken by the Government and thereafter by the Director on the Board's recommendation on the subject of establishing an experimental cotton market on the lines of the Berar Cotton Markets was noted. It was decided to advise the Government that the Government of India should levy a cess of Rs. 4 per bale on cotton exported out of India to finance the operations of the Indian Central Cotton Committee etc., and that the balance of such revenue should be made over to the various Provincial Governments *pro rata* for their own expenditure on cotton experiments. The renewal of the P. and O's mail contract was then considered and it was decided to advise the Government that it would be more convenient if the outgoing mail left on Friday and the incoming one arrived on Saturday, and that the Board could not confidently express its opinion on the other points. The Department's proposals regarding the pre-admission medical examination of candidates, and the quarterly medical examination of the students and medical attendance of the boarders of the Technical and Industrial Schools together with a statement of the probable additional cost were approved and recommended to the Government. Lastly, the Hon'ble Minister for Industries' note on the constitution, functions and working of the Board of Industries was read out to the members and it was decided to request the Hon'ble Minister to allow it to be circulated to the members.

Economic Board for Palestine.

The First General Meeting of the Economic Board for Palestine was held at the offices of the Board, 7, Queen Square, Southampton Row, on October 6. Among those present were Sir Adolph Tuck, Sir Stuart Samuel, Sir, R. Waley Cohen, K.B.E., Sir Samuel Instone, Mr. J. A. de Rothschild, Mr. H. Van den Bergh, and Mr. J. Cowen. In the absence of the Chairman the Right Hon. Sir Alfred Mond Bart., M.P., who was detained at a Cabinet meeting, Sir R. Waley Cohen was voted to the chair. He said that he was sure that it must be a great disappointment to Sir Alfred Mond not to be able to preside on that occasion, because the Economic Board for Palestine was so

largely his own idea. Sir Alfred felt that the acceptance of the Mandate for Palestine by the British Government, including as it did, the Balfour Declaration as to the establishment of a Jewish National Home in Palestine, had placed a special obligation on British Jews to stand by the Government and give them all the help they could in carrying out the extremely difficult task they had undertaken before the world and on behalf of the Jews of the world. In this, as in so many previous similar things, Great Britain had no ulterior motive, but was following her traditional policy of championing the oppressed, and that was why he thought that they were all under a special responsibility to support the Government in this matter.

It would be well that it should be thoroughly understood that those who were working on the Economic Board did so because they felt that at the present time the greatest service which they and any British Jew could render both to Great Britain and to the Jewish cause was to make the task of creating a Jewish national home in Palestine a successful task. They felt that the best way to do that was to create economically successful enterprises in Palestine, and that was the object they had in view. Dr. Weizmann, the head, of the Zionist Organization, had always very strongly welcomed the formation of the Board, and the expression of his feeling was shown in the presence there on this occasion of the representative of the Zionist Organization, Mr. Joseph Cowen, whom he was sure they all welcomed very heartily, though some of them might not share all the aspirations of the Zionist Organisation.

He believed himself, though he was not an authority on the subject, that Palestine had considerable natural advantages, and that the objects which the British Government had set out to achieve could be achieved; but it was no use disguising the fact that a lot of money would be required if it was to be achieved with a degree of success. The utilization of the water-power, which at present flowed unused to the sea and was the country's most valuable potential asset, harbours, houses, credit facilities for industry and agriculture, irrigation,—these were all urgent necessities, and many of them were likely to be good investments; but of course they all depended upon the necessary capital being available. They might get, they certainly would get, some money from the Jewish public on a non-commercial basis because of their feeling for Palestine and their desire to help in building up the country. But it was impossible to get capital on the scale they would require unless people were convinced that the enterprises on which the capital was to be laid out were sound business undertakings and that they would be properly managed. They judged that, more than anything else, from the standing and reputation of those who would be responsible for the enterprises. It therefore seemed to the Executive Committee that the right thing to do was to get together a body of men of proved capacity and judgment, men who would have the public confidence, and that only in that way would they have the chance of getting the capital they required. How far they had been successful in doing this, they would be able to judge from the list of members which had been sent to them.

Another point which they had in view was to co-operate as closely as possible with other bodies working in Palestine so as to co-ordinate all the activities that fell within their particular sphere, the economic sphere. For that reason they had been

very glad to welcome on the Executive Committee members nominated by the Zionist organization and also by the Jewish Colonization Association, both of which bodies had of course experience and special knowledge which would be of great value to them. They also hoped to have the assistance and support—in fact it was more than a hope, because they had had an assurance of their support—of those in America as well as other countries who shared their views and their objects. They felt that it was only by pooling all available resources that they could hope to achieve substantial results.

He would now like just to indicate their programme of work as far as they had been able to realize it. He thought it was generally accepted that the most urgent needs for Palestine were the hydro-electric projects for obtaining power from the Jordan and other rivers, and also the question of the harbour. These two enterprises were of paramount importance, because they were productive enterprises in the fullest sense of the word. They would give employment to a very large amount of additional labour and they would have an incalculable effect upon the permanent prosperity of the country. He was not able to say much about them in detail then, but they would require a large amount of capital and a great deal of examination if the capital was to be wisely spent.

Probably everyone there had heard of Mr. Rutenberg's scheme of a hydro-electric power station to utilize the water-power that was already available. He had gone far with his negotiations, and no doubt some definite scheme would come up for consideration as soon as there seemed any possibility of getting the large amount of capital required. The question of the port was also approaching a more definite stage, and it was hoped to proceed almost immediately with the necessary preliminary boring and sounding. The Economic Board would be able to perform a useful function in connection with both these enterprises and no effort would be spared to do so.

Apart from these larger schemes, which necessarily would take some time, there were a large number of small, promising propositions which were constantly coming up there, and which they believed could form the basis of a number of industries which might develop very largely indeed. The first, probably the most immediate task that they would have before them would be to provide capital for those propositions in so far as they were sound and promising. They considered very carefully the best way of putting themselves in a position to deal with those propositions. They had decided that the most practical way of dealing with them was to form a company to be called The Palestine Company, with a capital which he believed was provisionally fixed at about £200,000.

The purpose and object of that company would be to examine these propositions and enterprises, to invest in these undertakings and enable them to be started as soon as possible after they had been examined on the spot by their representatives. The company would of course have a representative in Palestine, who would act as their agent and sit as their nominee on the boards of any companies in which they might make investments, and who would be responsible for seeing that they were efficiently managed. He would have liked to put a prospectus before the meeting, but they had not got quite as far as that yet, though they hoped very shortly to do so.

Without going into details of the various under-

takings which had come before them, he might say that one of the most urgent things was, of course, to assist in house-building in Palestine. There was an appalling scarcity of housing accommodation in all the principal towns, and rents were very high. With the fall in the cost of building material, however, they hoped that it would be found possible to put up houses on an economic basis, and that they might be able to assist in this.

Another enterprise which would be of interest, and which looked rather promising, was a transport scheme for bringing corn and other produce across the Dead Sea into Palestine, and conversely for sending merchandise from Palestine to Transjordan. That seemed to them to be of great importance because of the benefits which it would confer on the inhabitants on both sides of the river. The Government of Palestine was also interested in it, as the Company, if formed, would have a contract with them for the conveyance of mails and troops. Such an enterprise might do a great deal for the backward regions east and south-east of the Dead Sea, and that was one of the matters on which they were securing further information.

They were also anxious to help the production of articles of general use, for which the country is at present dependent on imports from outside, and there was a salt scheme before them which looked as if it would be able to take almost the first place among the schemes they were examining. The capital required would be about £40,000. They had already received promises which made them able to say now that they could finance that scheme, with the aid of the J. C. A., who had undertaken to subscribe half this amount.

Before sitting down he would like once more to emphasize the vital importance—of course it was absolutely vital to this enterprise—that they should secure a large measure of support. Their objects, their aspirations, were very plain, simple and straightforward. They were determined to test all the enterprises into which they put funds by the severe economic test of whether they could be made economically successful on sound business principles. He thought that an illustration of what should be their aims might be drawn from the life of Sir Ernest Cassel. He did not suppose Sir Ernest Cassel, when he put money into Egypt, originally did so solely from business motives. He thought there was sentiment attached to it. He thought in their affairs, too, there was considerable sentiment. Some were perhaps moved more by what he might call the Nationalist sentiment; others more by the feeling that as British Jews the British Government had a call upon them. Whatever it might be, there was no doubt that if that body could develop in Palestine a number of really successful industries, they would be rendering an invaluable service to the Jewish cause and the British cause. On that account he did venture to appeal to the meeting to secure a much wider circle of friends to support their organization. They had to do work of a varied character, and if they were to do it adequately, they would need men and women of varied experience.

The proceedings terminated with a vote of thanks to the Chairman, proposed by Mr. J. de Rothschild, and seconded by Sir Adolph Tuck, Bt.

The new service under Danish auspices between Riga and Rewal and American ports has been taking full cargoes inward and outward during its two months' operations.

Leaders in Finance and Industries.

CHARACTER SKETCH OF THE MONTY.

Jack London, the Great Socialist Novelist.

E. Wharrier-Soulsby, reviewing Jack London's life by his wife, writes thus in the *Labour Leader* :—

As was fit and proper the official biography of our comrade, Jack London, has been left to his wife, Charmain, his fellow adventurer for many years in the great game of life, and the result is a couple of volumes at once tender, intimate, human, and inspiring, a fine record of a glorious career and companionship.

In the Preface she says: "Here I give to the world my Jack London—a virile creature compounded of curiosity and fearlessness, the very texture of fine sensibility, the loving heart and discerning intuition of a woman, an ardent brain, and a divine belief in himself." That sentence pictures Jack and discloses the cause of his success and power. A flaming, dynamic personality, charged to running over with energy, endowed with a unique capacity for concentration and hard work, keen, quick, and yet able to retain a genuine interest in everything and everyone, he was a man of outstanding loveableness and attractiveness, one of the dominating figures of his age.

BURNING THE CANDLE AT BOTH ENDS.

On reading these chapters one is speedily convinced that the qualities which made him were precisely the qualities that killed him. His life was hard from the very beginning, and as he went on he voluntarily shouldered additional burdens. Physical hardships—it is well to remember how he beat the toughest in rough ways of living—and mental strain inevitably conquer in the long run, and during his short sojourn here Jack not only recklessly burned the candle at both ends but in the middle also, with the consequence that the golden flame flickered and went out prematurely with tragic suddenness.

WHY THE SOCIALIST GOSPEL ATTRACTED HIM.

But his chief work was done, not all that he wished perhaps, not in the way he desired may be, but sufficient to last the movement he loved so passionately for many generations to come. If he is not fighting shoulder to shoulder with us to-day he has left in the bulk of his stories, and especially in "People of the Abyss," "The Iron Heel," "The War of the Classes," and "Revolution" a legacy priceless beyond compare, an inheritance and a memorial as stimulating and permanent as his own vivid, enchanting character.

Jack London was a Socialist because conditions and intelligence would not allow of anything else. Emerging from "the real dirt" by sheer strength and daring these attributes carried their possessor to a certain point. Then the machine got to work and did its worst with him. Amongst the Bay pirates, at sea, on the road, in the factories, and in the soul-searing prison he ran hard up against things as they

actually are. He saw men drowned, broken, cast aside; children deprived of their youth and innocence, and murdered; women exploited and debased and his manhood revolted. The Socialist gospel afforded the sole solution, the one hope in a mad, bad world, where the majority of the people, simply because they are defenceless through lack of combination, form a huge, inexhaustible profit-making proposition to those astute and callous enough to milk their labour.

From the day the truth dawned he never forgot the wrongs of his class, and for the remainder of the strenuous and all too brief journey his splendid talents were ever at the disposal of the oppressed. Yeoman, heroic service did he render as lecturer, propagandist and novelist. His opportunities to sow the seeds of unity and world-brotherhood increased with his fame, and never a chance was neglected. His encyclopædic knowledge, his first-hand experience, his terse presentation of a case, and his glowing, infectious enthusiasm are responsible for converts in every country of the globe. Masterly in diagnosis, unapproachable in argument, armed at every point, he left the opposition nothing to do but demonstrate the poverty and weakness of their resources, to wallow in a Slough of Despond.

A FLESH-AND-BLOOD PORTRAIT.

Of his many-sided activities, his conversation, his beliefs, his friendships, his plans, his marvellously full days, his travels, his recreations, and his methods these books contain a sympathetic account. No one could have limned such a striking, animated, flesh-and-blood portrait of Jack as Mrs. London has done here; and as tribute to her skill it is impossible to read that swift, terse, pathetic narrative of the last night and morning without feeling a sense of personal loss, the fathomless pity of it all. The text is plentifully interspersed with adequate and handsome illustrations. There is a serious drawback, though, and that is the price, 36s., high even for these times of dear literature. But by clubbing together little bands of comrades should be easily able to make the purchase, which will have an everlasting value and charm. The variety and style of the matter make it one of the most fascinating and enjoyable Lives published within recent years. I hope merely a short time elapses before costs and demand enable Messrs. Mills and Boon to place a cheap edition within the reach of Jack's immense following. An unprecedented sale ought to be our tribute to his memory.

Rest, Jack, and sleep: the grain you scattered is promising a bonanza harvest.

Production in the Rumania metallurgical industry is reduced to 30 to 40 per cent of normal, due chiefly to foreign competition and lack of coke. The foundries require 859 wagons of coke monthly.

*"Jack London," by Charmian London. The official biography. With 14 illustrations from photographs. Two volumes, 36s. net. Messrs. Mills and Boon, London.

A factory in Upper Austria which was equipped to produce 1,000,000 rifles annually is now manufacturing six-cylinder motor cars and lorries. The output for 1921 is estimated at 4,000.

Book of the Month.

THE FRUITS OF VICTORY.

A Sequel to—The Great Illusion By Norman Angell

By Albert J. Saunders, M.A., F.R. Econ. S.,

American College, Madura.

When *The Great Illusion* was published in 1911, Mr. Norman Angell was a young man unknown except to a small circle of his own countrymen. The skill of his argument, the daring of his position, and the way he marshalled and interpreted his facts soon made a deep impression upon thinking men in many countries and Mr. Angell became a marked man. Of course, his position was assailed, and men failed to see the economic reaction which is bound to follow a great modern world war. But more and more discerning men, especially in the confusion of these reconstruction days, are coming to see that there was a terrible and irresistible truth in the words of the author of the *Great Illusion*. As *the Daily News* said on February 25, 1920 :

"After five and a half years in the wilderness, Mr. Norman Angell has come back. . . . His book provoked one of the great controversies of this generation. . . . To-day, Mr. Angell, whether he likes it or not, is a prophet whose prophecies have come true. . . . It is hardly possible to open a current newspaper without the eye lighting on some fresh vindication of the once despised and rejected doctrine of Norman Angellism."

It was with great anticipations therefore that I had the opportunity while in London in October 1921 to meet and hear Mr. Angell discuss some of these tremendous problems which are agitating the thinkers of our day in all the larger countries of the world. He dealt with the theme—"absolute Nationalism and the social Future." Among many good and apt things he said:—"What the world needs is a less intense nationalism." "Humanity is the ultimate social unit," and "social units can only live by co-operation." "Nationalism means competition for power, the antidote is co-operation." "The moral bearing of the economic problem is the fundamental right of existence." Thus it will be seen that Mr. Angell represents the great cause of Internationalism by the means of co-operation. It was with deep interest then that I have been studying his latest contribution—*The Fruits of Victory*, and I wish to pass on my impressions of that work.

The Fruits of Victory (London, the Labour Publishing Company, 1921, 3s. 6d. really consists of two parts—the author's thesis proper in reference to the results of a military victory, and an Addendum containing some notes on "The Great Illusion" and its present relevance. I shall not attempt to deal with the addendum, except as it is necessary to throw light on the main thesis. In a very true sense the *Fruits of Victory* is a proof of the positions taken in the *Great Illusion* as furnished by the war, and simply means—"I told you so." The title of the study—*The Fruits of Victory*, is well expressed, but following Prof. Seligman's 'The Economic Interpretation of History,' or Mr. J. M. Keynes' 'The Economic Consequences of the Peace,' Norman Angell's book might

just as well have been called—an Economic Interpretation of the Great War.

In the midst of the great confusion of thought and the many misunderstandings of Reviewers and Leader writers, some of which persist to this day, which followed the publication of the *Great Illusion*, it will be necessary for us at the very outset to hear from the author himself what his main thesis was in the book which caused such a controversy a decade ago. Mr. Angell says (*Fruits of Victory*, p. 58 F.):—

"The *Great Illusion* was an attempt frankly to face this ultimate question of the bearing of war upon man's struggle for survival. It took the ground that the victory of one nation over another, however complete, does not solve the problem; it makes it worse in that the conditions and instincts which war accentuates express themselves in nationalist and racial rivalries, create divisions that embarrass and sometimes make impossible the widespread co-operation by which alone man can effectively exploit nature." Again, p. 60—

"The real economic argument against war does not consist in the presentation of a balance sheet showing so much cost and destruction and so much gain. The real argument consists in the fact that war and still more the ideas out of which it arises, produce ultimately an unworkable society . . . The real 'economic argument' supported by the experience of our victory, is that the ideas which produce war—the fears out of which it grows and passions which it feeds—produce a state of mind that ultimately renders impossible the co-operation by which alone wealth can be produced and life maintained. . . . The war has left us a defective or perverted social sense, with a group of instincts and moralities that are disintegrating western society, and will, unless checked, destroy it. These forces, like the 'ultimate art' which they have so nearly destroyed, are part of the problem of economics. For they render a production of wealth adequate to welfare impossible."

And again, p. 285 F:—"That argument (*The Great Illusion*) was an elaboration of these propositions: Military preponderance, conquest, as a means to man's most elemental needs—bread, sustenance—is futile, because the processes (exchange, division of labour) to which the dense populations of modern western society are compelled to resort, cannot be exacted by military coercion; they can only operate as the result of a large measure of voluntary acquiescence by the parties concerned. A realization of this truth is indispensable for the restraint of the instinctive pugnacities that hamper human relationship, particularly where nationalism enters. The competition for power so stimulates those pugnacities and fears, that isolated national power cannot ensure a nation's political security or independence. Political security and economic well-being can only be ensured by international co-operation. This must

be economic as well as political, be directed, that is, not only at pooling military forces for the purpose of restraining aggression, but at the maintenance of some economic code which will ensure for all nations, whether military powerful or not, fair economic opportunity and means of subsistence.

"It was, in other words, an attempt to clear the road to a more workable international policy by undermining the main conceptions and prepossessions inimical to an international order. It did not elaborate machinery, but the facts it dealt with point clearly to certain conclusions on that head. While arguing that prevailing beliefs (false beliefs for the most part) and feelings (largely directed by the false beliefs) were the determining factors in the international politics, the author challenged the prevailing assumption of the unchangeability of those ideas and feelings, particularly the proposition that war between human groups arises out of instincts and emotions incapable of modification or control or redirection by conscious effort. . . . The alternative conclusion is fatalism; an admission not only that our ship is not under control, but that we have given up the task of getting it under control. We have surrendered our freedom."

In the final conclusions the argument ran (Cf. p. 296): A conqueror cannot profit by 'loot' in the shape of confiscations, tributes, indemnities, which paralyse the economic life of the defeated enemy. They are economically futile. They are unlikely to be attempted, but if they are attempted, they will still be futile. Events have confirmed that conclusion though not the expectation that the enemy's economic life would be left undisturbed. We have started a policy which does injure the economic life of the enemy. The more it injures him, the less it pays us, and we are abandoning it as rapidly as nationalist hostilities will permit us.

That perhaps will do to give us an idea of the main argument of the Great Illusion in the words of the author himself. Let us now proceed to an examination of the later work — *The Fruits of Victory*. There are eight chapters: Our Daily Bread; the old Economy and the Post-war state; Nationality, Economics, and the assertion of Right; Military Predominance and Insecurity; Patriotism and Power in War and Peace; the Social Outcome; the Alternative Risks of Status and Contract, and the Spiritual roots of the Settlement. At the beginning of the study and several times in the body of the text a synopsis or summary of the argument is inserted, which enables one to follow the argument with far more intelligence. This practice is to be highly commended, especially in more technical and abstract discussions.

In the first chapter, Mr. Angell takes up the question of the place of economics in every-day, human interests. His writings had been criticised with taking too much of a sordid and materialistic view of life, and he defends his position by saying that economic considerations should not be so predominate a human interest, but under present conditions they cannot help but dominate. He says in a striking sentence: "A people that starves is a people thinking only of material things — food. The way to dispose of economic pre-occupations is to solve the economic problem." Continuing, the author says:—

"The obvious truth that, if economic pre-occupations are not to dominate the minds and absorb the energies of men to the exclusion of less material things, then the fundamental economic needs must be satisfied; the fact that though the foundations are certainly not the whole building, civilization does rest upon

foundations of good shelter, fuel, and that if it is to be stable they must be sound—these things have been rendered commonplace by events since the Armistice. But before the War they were not common places. The suggestion that the economic results of war were worth considering was quite commonly rejected as 'offensive' implying that men went to war for 'profit'. Nations in going to war, we were told, were lifted beyond the region of 'economics'. The conception that the neglect of the economics of war might mean—as it has meant—the slow torture of tens of millions of children and the disintegration of whole civilizations, and that if those who professed to be the trustees of their fellows were not considering these things they ought to be—this was very curiously, as it now seems to us at this date, regarded as sordid and material. We now see that the things of the spirit depend upon the solution of these material problems."

The main point of this first chapter is: Our daily bread is dependent upon international co-operation, war breaks up international co-operation, therefore war interferes with the world's daily bread. Here is a striking sentence quoted from the *New Statesman*: "As long as German workmen are unable to exercise their full productive capacity, English workmen will be unemployed. That, at present, is the root of all the problem. For the last two years we, as an industrial nation, have been cutting off our nose to spite our face. In so far as we ruin Germany we are ruining ourselves; and in so far as we refuse to trade with revolutionary Russia we are increasing the likelihood of violent upheavals in Great Britain."

Commenting on that our author says:—"Obviously therefore it is not merely a question of production, but of production adjusted to consumption and *vice versa*; of proper distribution of purchasing power, and a network of processes which must be in increasing degree consciously controlled."

The whole matter is summarised in this proposition, and where Britain is mentioned any other country, unless absolutely self-contained, may just as correctly be substituted:—

"The present conditions of Europe show that much of its dense population (notably the population of the British Isles) can only live at a standard necessary for civilization (leisure, social peace, individual freedom) by means of certain co-operative processes, which must be carried on largely across frontiers, the mere physical existence of much of the population of Britain is dependent upon the production by foreigners of a surplus of food and raw materials beyond their own needs. The processes of production have become of a complex kind which cannot be compelled by preponderant power, exacted by physical coercion. But the attempt at such coercion, the inevitable results of a policy aimed at securing predominant power, provoking resistance and friction, can and does paralyse the necessary processes and by so doing is undermining the economic foundations of British life."

The daily bread of the world then depends upon international exchange of goods, and that in turn depends upon a stable foreign exchange, for "the lack of confidence in the maintenance of the value of paper money, for instance, is rapidly diminishing the food productivity of the soil; peasants will not toil to produce food which they cannot exchange, through the medium of money, for the things which they need—clothing, implements, and so on." To put it in other words: "to retard or prevent the economic restoration of Germany means retarding the economic reconstruction of Europe."

The underlying thought in this first chapter is — production of food to feed the world is the result of international co-operation; physical coercive force like war breaks down such international co-operation and diminishes production causing all kinds of hatreds and needs. The only way out of the difficulty is to restore co-operation. To put the matter concretely, the only way to restore international co-operation and foreign exchange is to restore Germany and Central Europe, instead of exacting an indemnity the Allies should be making a loan to their enemies for the good of the world including themselves.

I shall not attempt to give an analysis of each chapter, for the main argument is more or less a unit, and runs throughout the book. The various chapters are illustrations of how the argument works out, and shows the changes that are taking place in economic thought and practice to-day. Take for instance — the old economy and the post-war state. Mr. Angell takes the position that the war has shown us that individualism in our economic life is giving way to some form of State socialism; "The old individualist economy has been largely destroyed by the State socialism introduced for war purposes; the nation, taking over individual enterprise, became trader and manufacturer in increasing degree. The economic clauses of the Treaty, if enforced, must prolong this tendency, rendering a large measure of such socialism permanent." The outcome of this attitude on the part of the State may yet have an important bearing on private property, for if life does not belong to the individual, and it did not in the war, for the State demanded a man's life, may it not also take his property! "Here was new light on the institution of private property. If the life of each belongs to the community then assuredly does his property." "The future of private property . . . has become within a year or two . . . a dominating issue in European social and political development."

This position raises certain profound questions of Right, "which our author then proceeds to discuss. His question is — Has a State the right to destroy or even limit the life of another State? His answer of course is that a State has not that right, but if it thinks it has and attempts to exercise that right it is bound to destroy or limit its own life in so doing. Might cannot make Right. He shows that intense nationalism is a menace to the peace and well-being of society. "The problem is to reconcile national right and international obligation."

Norman Angell criticises strongly such old doctrines — Balance of Power, intense Nationalism, Military Predominance, as all making for insecurity. He holds that the policy of Balkanising Europe (that is, creating a number of small, independent states) is a great mistake and danger to the world. There is no hope for a world of opposing groups; they must get together and live together or they are doomed. "The price of the preservation of nationality is a workable internationalism. If this latter is not possible then the smaller nationalities are doomed." On the other hand Mr. Angell emphasises — democracy, moral and ideal ends, co-operation, and internationalism as the only hope for the future: "Victory reveals a most astonishing post-war indifference to those moral and ideal ends for which we believed we were fighting. Is it that they never were our real aims at all, or that war has wrought a change in our nature with reference to them?"

Our author has a good discussion of what he calls — Alternative Risks of Status and Contract. He says:

"Two broad principles of policy are available; that looking towards isolated national power (status), or that looking towards common power behind a common purpose (contract)." Of the first he says: "We have indeed seen that the Balance of Power means in practice the determination to secure a preponderance of power The alternative is partnership." That is internationalism, which, he says, "is assumed to be the alternative to the employment of force or power of arms, whereas it is the organization of force, of power (latent or positive) to a common — an international — end." The great fundamental need for the accomplishment of any successful internationalism is — a Social Will. "The prerequisite to the creation of a society is the Social Will."

In the last chapter Norman Angell deals with — the spiritual roots of the settlement, and discusses the problem, can we change our instincts and inherited tendencies? He quotes and answers an opponent thus: "You may argue as much as you like. All the logic chopping will never get over the fact that human nature is always what it is. Nations will always fight . . . always retaliate at victory." "If that be true, and our pugnacities, and hates, and instincts generally, are uncontrollable, and they dictate conduct, no more is to be said. We are the helpless victims of outside forces, and may as well surrender, without further discussion, or political agitation, or propaganda." But Angell holds of course that we are not the play-things of a cruel fate. He says: "But happily that is not the alternative, the function of reason and discipline is not to repress instinct and impulse, but to turn those forces into directions in which they may have free play without disaster. . . . It is not true that the directions taken by our instincts cannot in any way be determined by our intelligence. A man's impulses are not fixed from the beginning by his native disposition; within certain limits they are profoundly modified by his circumstances and way of life. What we regard as the "instinctive" part of our character is, again, within large limits very malleable: by beliefs, by social circumstances, by institutions, and above all, by the suggestibility of tradition, the work often of individual minds." "In human society mere instinct has always been modified or directed in some measure by taboos, traditions, conventions, constituting a social discipline, the character of that discipline is largely determined by some sense of social need, developed as the result of the suggestion of transmitted ideas, discussion, intellectual ferment." "If we are to correct the evils of the older tradition, and build up one which will restore to men the art of living together, we must honestly face the fact that the older tradition has failed." The older tradition was: national power and greatness, leading to war and the crippling of an enemy state. The recent war has and is still showing us that we cannot hurt any state in these modern times without also hurting ourselves. The newer policy that we must now try is — international co-operation for the good of all."

Mr. Norman Angell is one of the few clear thinkers of our day. He is preaching a sane internationalism which is the world's greatest need at present. The art of how to live happily together is worthy of our most diligent study and practice; therefore, I heartily recommend to all thoughtful persons the earnest reading of Norman Angell's 'The Fruits of Victory.'

Argentine exports with few exceptions have declined during the first quarter of 1921.



Books in Brief.



SHORT REVIEWS OF RECENT BOOKS.

Oil Shales.

By H. B. Cronshaw, B.A., Ph. D., &c., Published by Mr. John Murray, London. 5s. net.

Only recently, when the demand for petroleum has so enormously increased and there seemed to be a danger of exhaustion of supplies of natural oil, has attention been directed to other sources of supply, especially oil shales. These are shales rich in bituminous substances and yield oil and gas on distillation. Oil shales have been worked for the production of oil for a number of years in Scotland, France, and a few other countries, but lately deposits in the Kimmeridge Clay in England have been receiving attention whilst those in Norfolk are under development. Much research has also been undertaken on the vast oil shale deposits in the United States, especially those of Utah, Colorado and Wyoming, those at De Beque, Colorado being actively developed. Interesting information on the subject of this source of oil is given in the above volume entitled "Oil Shales" just issued in the series of monographs produced under the direction of the Mineral Resources Committee of the Imperial Institute. The monograph first describes oil shale and the similar material torbanite; the mining and distillation of oil shale; and the composition and properties of shale-oil. Descriptions follow of deposits of oil shale and torbanite in various parts of the British Empire, including those in the Utrecht district of Natal, Wakkerstroom district of the Transvaal, Albert County in New Brunswick, Pictou County in Nova Scotia, Blue Mountains in New South Wales and Mersey district in Tasmania. Accounts of foreign deposits are given next and include those of the United States, France, Bulgaria and Brazil. A map showing the oil shale deposits of the world and a bibliography conclude the volume.

Cotton Facts.

By Shepperson Publishing Company.

The 1921 Edition of "Cotton Facts" has been characterized by "Commerce and Finance" as the Bible of the Cotton Trade.

"Cotton Facts" covers thoroughly every branch of the Business from the production and marketing of cotton to its manufactures and distribution. For example, it gives the latest figures from official and other reliable sources, concerning the acreage and yield of cotton, its condition during various periods of its growth, the surrounding climatic conditions affecting its growth at different points in its maturity and the date harvesting; all covering a series of year, which makes the book of the greatest assistance in forecasting another year crops. Facts and figures concerning the world's movement of cotton, exports, imports, amounts of sales, values and prices, Market fluctuations, distribution, consumption, etc., etc., are also given in detail for a series of years making the work invaluable to Merchants, Brokers and Shippers interested in Market Statistics.

It has also been very thoroughly revised and en-

larged in many important particulars, among which the following are deserving of special mention: viz, Comparative statistics on Killing Frosts, seasons 1919-20 with 1920-21; the extension of statistics on Ginning to specified dates to cover a period of ten years back; exports from Egypt; world's Invisible Supply Carry Over; Supply at Close of Season; Weekly Sales at Liverpool; Japanese Consumption; Consumption by World's Spindles; Exports of Cloths and yarns from U. S., Japanese yarn exports; Extension of table on Sales of Print Cloths, Trade in Foreign Countries (Manufactures), Cottonseed Exports, etc., etc. The entire book has also been arranged so as to more readily serve the convenience of those who consult its pages. Tables bearing on the same subject have been correlated so as to bring all statistics on a given subject contiguous to one another and the whole book to progress in orderly sequence from the analysis of the staple to its final distribution, taking up in proper order, its planting, cultivating, harvesting, ginning, marketing, manufacture and distribution. With additional material on the products of cotton — cottonseed — oil, meal, etc., each page bearing its subject title at the top so that readers may readily locate any district desired topic, by a glance at the book without consulting the index. An enlarged and more carefully arranged alphabetical index however gives additional assistance for quick reference as to specific details, and an analytical contents is given to show the general scheme of arrangements, and theory of construction of the work; while abundant cross references also contribute to the correlation of its material. The advertisements this year have also been rearranged so that the advertisers are now classified according to their location.

Another improvement this year in the binding of the book, in flexible cloth binding for greater convenience in handling; it having originally been made pocket size for this purpose.

"Cotton Facts" is known and used in every continent on the Globe, Egypt, China and Japan especially giving a large number of orders. It has a very extensive foreign circulation elsewhere as well, and we are pleased to learn of its increasing popularity.

The Shepperson Publishing Company also publishes other literature on the subject of cotton. Particularly, system of codes for domestic and foreign use, designed to enable users, to transmit cipher message relating to trade transactions with the use of but a simple work. Col. Shepperson spent much of his life in this study of code efficiency and reached such a degree of facility in this respect that his name has become prominent among code compilers of the world. All of which he has transmitted to succeeding generations as his legacy to the cotton trade. The mantle of Col. Shepperson had fallen upon his able and efficient representative C. W. Shepperson who carries on the business with such success that we heartily congratulate the Shepperson Publishing Company on having such a worthy president and general manager.

Trade with India.

A general review of the conditions and prospects of British trade in India by Mr. T. M. Ainscough, the Senior Trade Commissioner issued by the Overseas Trade Department, is an able and useful piece of work. It is as unlike the old-fashioned Consular report of pre-war days as it is possible to imagine if only because it has been revised to October, 1921. In 360 pages Mr. Ainscough has dealt with all the outstanding events of the past two years, giving a comprehensive account of the events that led up to the heavy cancellation of contracts that has had such a disturbing influence on British trade. He deals with the Currency Committee's report, the traffic controversy, and the new policy in regard to the purchase of public stores.

In some detail he discusses the prospects of foreign competition and the position of rival commercial nations in the markets of India. Stress is laid on the importance of the United Kingdom taking a larger share in India's export trade. Mr. Ainscough regards it as a source of potential weakness that the British Isles only takes from India less than one-half the value of the goods which she exports thither. India's most important markets, apart from the United Kingdom, are normally Germany, the United States, Japan, Italy, and France, and the point is made that there will be a tendency for her to buy more from countries which take her merchandise.

Attention is directed to the strenuous efforts that are being made by American merchant houses to obtain a greater hold on the trade of India. The significant statement is made that during the cold weather India is full of American travellers, and special mention is made of the assiduity with which American goods are pushed. Japanese competition on the other hand, seems to have diminished, except in certain goods, such as cotton hosiery, and in many cheap lines. German shipments are steadily increasing, a fact attributed to the depression of the mark, but it is to be noted that among the Indian community Mr. Ainscough finds no anti-German feeling, while Germany is normally an excellent customer for hides, cottons, oil-seeds, jute, etc.

We are reminded that the gift of fiscal freedom makes it necessary for British business men to re-orientate their outlook, and since the question of the fiscal policy has been referred to a Commission, Mr. Ainscough suggests that trade associations and chambers of commerce in England should prepare their case and arrange for it to be presented—a most important practical step.

Stocks and Shares.

By Hartley Withers, Author of *Meaning of Money* etc. 8th Impression, Mr. John Murray. London, 6 sh. net.

This reprint of Mr. Withers' book on *Stocks and Shares* will be widely welcomed. It is a characteristic book and is almost a classical one on the subject. From the time it was first published it has had a vogue with readers which is certainly remarkable even for a popular writer of Mr. Withers' talents. The public is not slow to appreciate a good book and the fact that the present one has undergone eight successive impressions (including two editions) in but a decade shows its appeal to the public. It is a book as much for investors as to that wider public which delights in regarding Mr. Withers' literary description of financial topics.

The Life of Sivaji Maharaj.

By N. S. Takakhav, M.A., Professor, Wilson College Bombay. Published by the Manoranjan Press, Bombay. Price Rs. 7 or sh. 10.

This is an adaptation of Mr. K. A. Keluskar's original Marathi work on Sivaji published in 1907. It is, however, more than an adaptation; it includes much new matter not treated of in Mr. Keluskar's book. In fact, this has been made the basis for a revised edition of Mr. Keluskar's work. Mr. Takakhav refers to recent works on Sivaji and states that they leave much to be desired. His criticism of these works is interesting to a degree, for it shows the basis of his own biography. Professor Takakhav has the first essential of a good biographer: intellectual sympathy with the person of whom he writes. His may not be the last word on Sivaji's life and work but it goes far in redeeming both to no small extent. Various points of special interest are touched upon by Prof. Takakhav in his work, such as the influence of Ramdas on Sivaji, the murder of Afzalkhan, etc., and on all these he brings to bear both research and judgment. What does Sivaji stand for in the history of Hindu India? The answer to this great question is furnished by Prof. Takakhav in a convincing manner. We have no manner of doubt that the book will have, as it deserves, a wide circulation.

Principles of Comparative Economics, Vol. I.

By Radhakamal Mukerjee, M.A., Ph.D., with a Preface by M. Raphael Georges Levy, Sénateur, Membre de l'Institut de France, etc. Messrs. P. S. King & Son, Ltd., London, 15 sh. net.

Mr. Radhakamal Mukerjee breaks entirely new ground in this work. It is devoted to the exposition of the Indian Economic position and the conditions under which it has been evolved. The first part leads to the second. Mr. Mukerjee's is a stimulating book. It is impossible that people will agree with him in the doctrine he evolves about communalism. But it must be said in justice to the author that he has been the first to enlarge on an aspect of Economics as relating to this country that has been all but neglected. Prof. Levy who writes a searching preface to the book, does not agree with the author in his conclusion. But he readily acknowledges the value of his work. The interest of the book consists in its view point and to it we would direct attention. It is undoubtedly one to read and ponder.

South India and Her Muhammadan Invaders.

By S. Krishnaswami Aiyangar, M.A. Published by Oxford University Press, Bombay and London. Price Rs. 8.

This book, dedicated to H. H. the present Maharaja of Mysore, fills a want. The exact circumstances which favoured the advent of the Muhammadan power into the South of India have never been made clear by the historians of India. Prof. Krishnaswami has done a useful piece of work in devoting his time to this neglected part of Indian history. The exact scope of the work will be clear when we say that it is made up of six lectures dealing with—Break up of the Chola Empire, South India in the XIII Century, Muhammadan invasions of the Dakhan, Invasions of South India under the Khiljis, the Tughlak Invasions, and Muhammadan Kingdoms in the Dakhan and South of India. The book contains some valuable geographical notes and appendices one of which is devoted to Ibn Batuta's account of South India.



From Our Readers.



Malabar Reconstruction Questionnaire.

Sir,—Malabar disturbances appear to be well nigh at an end. We, therefore, desire to solicit your co-operation in framing some adequate scheme of reconstruction.

We are fully conscious of the limitations of this questionnaire; but we should be glad if we succeed in arousing the interest of the public in this important matter so that all, the people and the Government alike, may co-operate in rehabilitating Malabar. In compiling this questionnaire, we beg to acknowledge the valuable help received from gentlemen of all shades of opinion resident in Malabar.

The questions are designed to cover the whole field of enquiry, as far as it can be outlined at this stage. It is not, therefore, necessary that all the questions should be answered. If any one wishes to give his views on any points relevant to the enquiry which have not been included in the questionnaire, it would be convenient that such points are dealt with in a supplementary statement.

I. ECONOMIC. (a) Grants and Loans :

1. Will it be necessary to make free grants of money to the poorer classes of the people so that they may purchase cattle and seed; build or repair houses; store provisions until the next principal harvest? If so, what amount will approximately be required for the several amsoms? (You may state approximate figures for the amsom with which you are familiar.)

2. Would you recommend long or short term loans? If so, specify for what purpose and for what classes? On what conditions should such loans be issued?

3. How far do you consider it possible for private enterprise, Co-operative Societies, Local Bodies, Charitable Institutions and Government to provide the necessary funds?

4. Would it be feasible to utilize the Co-operative Societies (the Urban Central Bank, the District Banks, and primary societies) for the distribution of loans, Government supplementing their financial resources?

5. Would you suggest loans in cash or in kind?

6. Through what agencies can this work be best administered?

7. At what rate of interest are loans generally available to the various classes of tenants in Malabar?

8. What steps should be taken to assure the villager obtaining loans at a reasonable rate of interest?

(b) Land :

9. To what extent can Jenmies help in the reconstruction process affecting the position of the tenants?

10. Do you anticipate any dearth in agricultural labour owing to present troubles? If so, what is the remedy?

11. Do you consider it advisable for Government or some Government agency to manage for a time the estates of Jenmies who express their desire for this course? If so, can you suggest the best way

to do so in the interests of both, Jenmi and tenant?

12. Have you any improvements to suggest in the present system of land tenure?

II. INDUSTRIAL.

13. Has the rebellion created in the district any serious increase in unemployment?

14. Should any industries be organized in order to absorb the unemployed? If so, what industrial development is most suitable?

15. How far can co-operative production be organized for this purpose? Suggest a workable scheme.

16. What facilities will be required for developing cottage industries as a subsidiary occupation?

III. EDUCATIONAL.

17. Will a better understanding among all communities be created by starting common schools for their children? What difficulties do you find in such a scheme?

18. How can education be popularized among the Moplahs?

19. Are you satisfied with the present type of Moplah education?

20. How far can Local Boards and Government finance any new scheme?

21. Would vocational and adult education be useful and practicable?

22. To what extent can private organizations in India help in the work of civic and moral education?

IV. CIVIC.

23. Do you think the inauguration of any scheme like the village patrols by young men, with some training and discipline, will help to create the amount of confidence necessary to check temporary local outbreaks in the future?

24. How can a healthy feeling of common citizenship, irrespective of caste and creed, be created?

V. GENERAL.

25. What measures do you propose to ensure the safety of the Hindus who have been forcibly converted and have reverted to their faith?

26. Do you consider that there are any areas in Malabar where there is likelihood of famine?

27. What facilities should be provided for the re-building of houses destroyed during the rebellion? Do you think there is scope for co-operative housing scheme for this purpose?

28. What schemes are necessary for the immediate development of communications, roads and railways, in the affected areas of Malabar?

29. What urgent reforms are necessary in the present relations between the landlord and the tenant in Malabar to remove agrarian discontent?

30. What development of industry in the affected areas would help the general advancement of the district?

31. Are there any other grievances which will have to be removed to promote permanent contentment of the people?

A. N. SUDARSANAM

W. HINDLE

Y. M. C. A.

Secretaries.

M. S. MADHAVA RAU

K. G. SIVASWAMY

R. SURYANARAYANA RAU

Servants of India Society.



Views and Comments.

BY "ECONOMICUS".



Speaking as Reception Committee Chairman, at the 10th session of the Madras Provincial Co-operative Conference, Dr. Swaminathan laid his fingers on the weakest links of the Co-operative chain in Madras, *viz.*, the snail-like progress of non-credit societies, inefficient audit and inspection of existing ones, want of business habits, punctuality, promptitude, scrupulous accuracy among individual members and societies, primary and central. He deplored that in spite of enormous increase in the departmental expenditure (nearly 6 lakhs per year, 3 times more now than a few years ago), the security in the Societies is not any the better. His view that more honorary agencies should be enlisted is good; one must admit with sorrow that, so far, only a very few of the best minds of the land are engaged in this humanitarian work.

* * * *

In the course of his Presidential address in the same Conference, Mr. Talma'ki of Bombay said:—"The present tendency of capital in India is to move towards large cities, attracted by their banking facilities, or by the commercial and industrial concerns. Thus while the agriculturists in rural areas are being starved for want of funds, and the traders, artisans and craftsmen in small towns are struggling by the absence of well regulated finance, a few cities in every province are overflowing with money, which besides financing legitimate commerce and industry has led to all sorts of speculation and gamble." Quite true, but among the causes that lead to this result, besides "the attraction of banking facilities or commercial and industrial concerns in our cities" we must mention others, *viz.*, the present habit of big landlords and zamindars who, commuting rent in kind to a money-payment, spent it, say in buying motor cars or hiring suburban villas in cities, travelling first class by rail, or buying numerous luxuries or necessities from abroad; the increasing dependence of the rural population on commodities imported from abroad and consequent flow of money to export or import centres and the coffers of the Rail-owners, ship-owners, agents and a host of intermediaries domiciled in India and abroad; the collection of Government kists and other payments which are spent mostly on the military, the police, the judiciary and the Civil Service whose incumbents, especially those who get fat salaries and can save, spend or invest the money in cities or district headquarters or outside the country.

* * * *

Writing in a recent issue of the *Daily Herald* about the Egyptian situation, Mr. H. N. Brailsford asks, "How comes it that the Tellaheen, who labours seven days a week from dawn to dusk with incessant industry, in a field or rich alluvial soil in which bear in the generous climate three crops in the 12 months, accumulates nothing and possesses nothing, not even his wretched hovel of mud unless it be the mat which serves him for bed, the gown of blue cotton on his back, and the earthen jar which holds his maize?" The answer, according to Mr. Brailsford, is that the native landlords, the foreign banks, the

brokers and usurers who handle the cotton crop reap the profits. Add to these, the expenses on over-centralized administrative machinery and ever increasing dependence of rural classes on imported foreign commodities, the picture is fairly true of rural India.

* * * *

In opposing the "Interest Act Amendment Resolution" introduced in the Assembly by Mr. Abdul Quadir to enact that no creditor shall be entitled to secure by suit the interest in excess of the principal amount due at the date of the suit, Sir William Vincent, Home Member, showed strange sympathy with the Bania. According to him, "it would not be right to think of the Bania as a race of blood-suckers, but he was the backbone of the agriculturist and therefore every measure (!) designed to oppress him would make the business of the country impossible." We are sure that the Home Member will not disparage the efforts of Co-operative Credit Societies which seek to break this very backbone of the agriculturist. The real difficulty is to enforce the measure, since the unscrupulous Bania and the reckless borrower can get round the law by executing a fresh bond before the period allowed in the Act expires.

* * * *

In opposing Prof. Kale's motion in the Council of State to appoint a Committee to explore all sources of public retrenchment, Mr. Cook, Finance Secretary, India Government, announced that the Government was quite in sympathy with the object and taking measures to achieve the end and added that "if we wanted to shelve this matter we would undoubtedly have had a Committee". Does this mean that Committees are usually appointed to shelve matters? A rumour goes round in Madras that the Government have already ordered all possible economy in the Public Works, Irrigation and Development Departments. If true, this is to begin at the wrong end, while the higher branches of "service," military and civil, are still basking in the sunshine of overabundance. Apart from this distinction between very highly paid "responsible" officers and very low paid subordinates, the Government must recognize that its over-centralized administrative machinery is thoroughly bad from a financial and political point of view.

There is a scarcity of soda in Czecho-Slovakia the amount available being equal to only about 30 per cent of the needs of the glass factories and other concerns using the product.

The area of the forests of the French colonial possessions is estimated at 247,000,000 acres. Arrangements have been made for their systematic exploitation on a large scale.

Last season's harvest in Czecho-Slovakia yielded 2,676,000 quintals wheat, 1,700,000 quintals rye, 3,335,000 quintals barley, 1,800,000 quintals oats, and 1,537,000 quintals maize.



Mainly About Persons.



H. G. Wells on Harding.

I saw the President for the first time at Arlington. He is a very big, fine-looking man and his voice is a wonderful instrument. He spoke slowly and very distinctly, his gestures admirably controlled. He is — how can I say it — more statuesque than any of the American Presidents of recent times, but without a trace in his movements or appearance of posturing or vanity. Men say he is a sincerely modest man, determined to do the best that is in him and at once appalled and inspired by the world situation in which he finds himself among the most prominent figures. Not only in its main circumstances but in many of its incidents is the position of the President of the United States appalling. I have heard much detraction of the President both before I came to America and since I have been here, but here I have found also a growing and spreading belief in him. And this address of his, rhetorical though it was in a simple and popular American way, was nevertheless a very dignified address and one inspired by a spirit that is undeniably great.

C. G. Leftwich, C.B.E.

Mr. C. G. Leftwich, C.B.E., has been appointed Indian Trade Commissioner, East Africa, with effect from the 12th December 1921. He is proceeding to Mombasa immediately and will assume his duties there.

J. D. Rockefeller.

Mr. John D. Rockefeller, reputedly the richest man in the world, demonstrated that he was not immune from the influence of the Christmas spirit by presenting six ten cent pieces to a Savanna newspaper representative who interviewed the "Oil King" aboard a train en route to Florida. At the conclusion of the interview, Mr. Rockefeller said to the questioner, "I want to give you something to remember our meeting by. Are you a married man?" The reporter replied that he was. "Well" said the multi-millionaire, smiling generously, "here's a 'dime' for you, one for your wife, one each for your mother and father, and one each for your wife's mother and father."

Lord Morley.

Perhaps the most flattering reference to Lord Morley of Blackburn — who was eighty-three last month — in the biographies of his contemporaries is Lowell's in a letter to his daughter in May, 1887. "At dinner" wrote the poet Ambassador, "I was glad to meet John Morley for the first time since my return. . . . The cheerful fanaticism of his face is always exhilarating to me, though I feel that it would have the same placidly convinced expression if my head were rolling at his feet at the exigence of some principle."

Stephen Leacock.

Mr. Stephen Leacock concluded his British tour in his native county of Hampshire — which he left

at the age of six for Canada — with a lecture to a large audience at the Bournemouth Winter Gardens. In conversation with the Bournemouth correspondent of the *Morning Post* he said: "As far as I know, it is not very likely that I shall ever have the opportunity to be free from my college work to come back again, but I leave with very great regret. I have met with such extraordinary kindness, and such generous appreciation from the audiences who have heard me all over England and Scotland, that the experience is one which I shall long cherish. I am afraid that when I go back to Canada, and say how I have been treated, it will let loose upon these shores a flood of Canadian humourists and economists. I hope, for my sake, that they will all be treated as I have been treated. From my experiences here, I am convinced that all the good old jokes about the lack of humour in the British people are a pure myth. I have made during the last three months a very handsome livelihood out of the British sense of humour, and I am properly grateful for it." Mr. Leacock left England for France to make arrangements for a French translation of his books. He expected to sail from Havre for New York in the second week of January.

Thomas Edison.

Mr. Thomas A. Edison has described to Mr. Henry Ford a new weapon his son invented during the war but which was not perfected in time for use. This weapon has a steel shell, in wheel form, about three feet high and six inches wide. Around the edge was a steel rim, smooth and heavy. This shell wheel could be filled with T. N. T. or any high explosive, regulated by a time fuse. When charged the wheel could be set on shafting and attached to a Ford tractor, highly geared. It would revolve at a tremendous speed, and when the speed developed to 35,000 surface feet per second it was automatically released from the shafting. In front was an incline plane, down which the revolving wheel sped with bullet speed. It would sometimes go two miles, cutting like a knife everything in its path. It went through a hundred feet of barbed wire entanglements, close set, as if they were cobwebs. It could cut a way through a wall and shoot on until the time fuse exploded, when it would level everything within 150 feet.

Austrian imports for 1920 amounted to 6,000,000 tons, of which two-thirds consisted of coal; the exports of 1,300,000 tons were chiefly of wood, magnesite, and other minerals.

Creosote for the impregnation of approximately one million beech railway sleepers is required in Zagreb (Serbia). The Department of Overseas Trade has further particulars.

A French company has obtained the contract for the installation in Ecuador of 14 wireless stations.

Reduced prices are announced by German manufacturers of enamel ware, vices, and bolts and nuts.

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Economic Reconstruction in India.

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In a previous article I tried to describe the consequences of some recent economic changes in India. The features of our economic transition may be thus summarized :—

1. The most prominent fact is the 'ruralization' or the increasing dependence of the people on the precarious agricultural industry, the comparative paucity of industries, small scale and large scale. (2) The utter dependence of the rural classes for the bare necessities of life on distant manufacturers inside and outside India. (3) The pressure of the population on the soil leads to the low standard of life, low earning capacity and low saving capacity of large masses of our countrymen. (4) In the absence of indigenous capital resources and for want of proper organization and institutions for diverting what remains to productive channels of industry, almost all our industries including agriculture are languishing. (5) While such resources are lacking in rural areas, there is an ever increasing accumulation of wealth or money in a few cities (mostly export and import centres) and in the hands of a few wealthy capitalists. (6) Most of the up-to-date large industries and plantations are financed by European capital and worked by foreign skill, though in recent years there is in evidence Indian capital and skill in a few manufacturing and commercial industries.

These phenomena are the results of certain definite causes which have to be controlled, modified or eliminated, as the case may be, if the consequences are to be avoided. Of the causes operating in our midst, the most important are :—

(1) This one-sided ruralization is due to the decay of many of our indigenous rural industries.

(2) The absence of such industries and the presence of commodities imported from abroad and these produced, controlled and marketed by efficient, strong and methodical financing and manufacturing houses assisted liberally by transport syndicates, both shipping and railway in India and abroad, help to supplant the indigenous goods in rural areas.

(3) The absence of such industries leads to an unholy scramble for work in the agricultural industry, already over-crowded, with the result that wages or income, and hence standard of life, of most of our workers are very low, and there is hardly, if any, margin for saving. Without saving there can be no capital; without capital, there can be no investment; without investment, no production, no earnings; without earnings, no saving — and thus the vicious circle continues.

(4) The dependence on foreign goods necessitates the withdrawal of resources from rural areas to ports handling the export and import trade from where, if foreign firms handle the trade, or by way of financing their transport to other countries and back, or paying for the services of manufacturers abroad, a part of our resources is made available for use in other lands. If some resources thus leaving our rural areas, stick in Indian hands, they may be invested in productive industries on a large scale controlled by Indians or may be squandered in buying and enjoying the utilities of imported "consumption" commodities or the money may change hands in innumerable unproductive ways with which city-dwellers are all too familiar.

(5) There are a few in rural areas who save and who can invest their resources in productive rural industries. But they may like to take up shares in industries started in cities

in other parts of India, or may subscribe liberally for State loans or other forms of unproductive investment; or engage themselves in money-lending in rural areas which inevitably results, in the present unorganized condition and preponderance of needy borrowers, in comparatively high rates of interest which tend still further to handicap the resourceless small producer; or they may like to invest their savings in purchasing agricultural lands, but this, besides leading to unequal distribution of agricultural produce among the villagers, has often no effect on the productivity of the soil; or, if such savings are utilized for jewellery or hoarding, they are lost for the time being and cannot act as capital in any industry. Again, in the case of some rich and well-to-do classes, the savings may be utilized in buying motor cars, gas lamps and other necessities and luxuries imported from abroad to deck the house and person with up-to-date and refined materials, travelling first class by rail, taking distant tours in India or abroad, etc. The economic result is that the available rural resources leave the village altogether without giving adequate work or support to its people.

(6) The collection of Government *kist* in money and spending the major portion of it on the higher branches of service, civil and military, whose incumbents who can make enormous savings are usually foreigners, and who spend their money, so far as they spend at all, in district head-quarters, or provincial centres; the enormous expenditure on such an unproductive item as the military whose units are mostly stationed in cantonments and cities and are moved about from place to place—these also result in the drain of resources from rural areas to other places.

It will be seen from the above analysis that what is generally regarded as *foreign* capital in India is to some extent *Indian* capital in the hands of foreign capitalists who are able to appropriate the surplus arising out of these transactions in exchange for their services—commercial, industrial, political—rendered to this country which, however valuable in themselves, are instrumental in bringing about the economic dislocation of rural areas and the comparative paucity of savings and resources among the vast majority of the rural population.

(7) Lastly, the average Indian to-day is certainly less businesslike and less clever than his Western brother. We do not inquire into the causes, but it may be said that it is not due to inherent incapacity. We may hope

to make of him a good businessman in the future.

If the above analysis of causes for our economic disintegration and decay is correct, the need for the following lines of reconstruction will be evident.

(1) The process of ruralization must be arrested by the resuscitation of small village industries. It is idle to expect that the Indian economic evolution of the future will, or ought to, follow the same line as the English or American. Of all rural industries, spinning and weaving are the most important. The producer, the merchant, the State, but above all, the consumer must see that the people insist on clothing themselves with pure home-made stuff from the handloom. This will give work to a considerable section of our countrymen, now out of work or getting only partial work.

(2) If machinery for cotton manufacture is at a discount, there is yet a place for large “engineering industries” in convenient centres. Small workers, agriculturists and artisans, are to be helped by good and efficient tools; machinery and materials for transport are indispensable. Future prospects are extremely bright since coal and iron are said to be in abundance in certain parts of India.

(3) There is immediate scope for the *Indianization* of our railway and shipping industries for which, as well as for careers for Indians in the services of the State, Government help is necessary since they are monopolies or quasi-monopolies closely controlled by the State.

(4) In agriculture, the first and most important need in most parts of India is water, and the State, public bodies and private individuals must increase irrigation facilities.

Second is the provision of easy and cheap credit. Co-operative credit societies are intended to act as links between the village money market and the provincial and world money markets by a regular gradation of Primary, Central and Provincial banks. Primary banks must include agriculturists, small artisans and industrialists and may be formed either on a *local* or *communal* and caste basis, according to circumstances. Other forms of co-operative activity are equally important, for otherwise what is gained in one may be lost in another, but it is to be preferred that the co-operative credit society will form the centre for further activities, wherever possible.

Uneconomic holdings are said to be a further menace to economic cultivation, but it would appear that facilities for effecting voluntary

consolidation of holdings are preferable to passing a law to establish "economic" holdings, for the difficulties and dangers of the latter measure are likely to be worse than the evil effects of the disease.

(5) The bigger landlords and large savers in rural areas must cease to depend too much on commodities or services imported from abroad and instead of killing the geese that lay the golden eggs for them, must nourish them by utilizing their savings to provide financial and irrigation facilities for their tenants or other rural classes by investing their surplus savings in co-operative credit societies or providing public utilities and other amenities, cultural and educational, of village life.

(6) The Government must cease paying very high salaries to its higher servants. Of all the maxims of utilitarian economists, the theory that "the greater the pay, the higher the efficiency in public service" is the most dangerous and least convincing; for the most part, *service* must be its own reward. There

is immediate scope for the retrenchment of military, police and judicial departments. Two reforms in the structure of administrative machinery must precede, however, before any retrenchment can be brought about:— First, the Government of India must have great trust on the people and must cease to think of employing those organs against the people. Second, there must be a large devolution of powers to local bodies or communal organizations whose honorary work must be enlisted more and more to provide the services of the State.

The lines of future development are, in short, the fostering of local self-help, the reconstruction of village life and the resuscitation of village industries and agriculture on communal, co-operative and self-governing basis; while to infuse new life into the system by supervising and supplementing, if necessary, the work of local bodies and communal organizations must be the constant endeavour of the State.

Indian Sugar Problem.

There can be no doubt that if we save our crushing and boiling losses we can produce 700,000 tons of sugar a year from the crop already grown. An additional million ton can be secured by growing thick cane on the present areas in place of thin canes under improved methods and if another $\frac{1}{2}$ to 1 million acres from unused forest and waste lands were provided for the crop we can depend on getting another million ton of sugar. A programme aiming at the production of an additional 3 million tons of sugar is well within the range of our capacity. I can safely assert that given capital, science, courageous statesmanship and enterprise India can produce 3 million tons of sugar within the next 20 years which at 500 rupees a ton means an increased annual wealth of Rs. 1,500 millions. The capital required say at Rs. 700 for a ton of sugar comes roughly to 200 crores at present prices and may be less if prices fall. Divided over 20 years we require only 15 crores a year. It is impossible to raise 10 crores a year in India alone. The enterprise, calls for both England and India to jointly raise the capital and share in the profits. Most of the capital required will have to be invested for purchasing plant in England, America or Germany and England would do India a service and provide employment for the unemployed by joining in the enterprise.

We need at least 400 factories; these

factories will need 800 chemists, 1,000 engineers, 1,000 managers, 1,000 accountants and 1,000 secretaries and thus provide employment for a large number of young men who now for want of occupation take up anything that promises solution of their difficulties. If we go ahead with the industry we shall produce in 20 years 3 million tons of sugar which at Rs. 500 a ton will bring 1,500 millions of new wealth to India and an additional 1,500 millions may easily be expected from the oil industry and improved food crops from sugar areas which would mean giving an additional income per head in India. Not a small achievement and not a useless ideal to work for. It will bring enormous new business to banks, railways, commerce and trade. The British Government to-day is arranging credits both at home and abroad to rehabilitate their industries. Why should the Government of India (asks "Indian Business") lag behind and indulge in special pleadings to postpone action? It must either take action or repudiate the report of the Sugar Committee.

In view of the improved butter position in England, the Australian Dairy Produce Committee has decided not to take further action at present with regard to the purchase of the remaining Imperial Government stocks of Australian butter.

Agriculture in the United Provinces, 1920-21.

By "Rusticus."

In previous reviews of the Reports on the administration of the Agricultural Department in the United Provinces, we have commented on their brief and business character. Mr. Clarke, the Officiating Director of Agriculture, is a worthy successor to Mr. Hailey and Dr. Leake in this as in other respects. He wastes no words and yet his Report is full of what an American would term "meat". It is a genuine pleasure to read such an acute and helpful analysis of the agricultural problems of the Provinces.

The three principal crops of the United Provinces are cotton, wheat and sugarcane. In dealing with the vexed questions arising in regard to the first and last of these, the agricultural authorities would be the first to admit that they have and will derive great assistance from the labours of the Indian Cotton and Sugar Committees. In these days when political questions are so much to the fore, the valuable constructive work done by Committees such as these is apt to be entirely ignored except by those immediately interested. The speedy action taken in the United Provinces on the recommendations of the Cotton Committee should, however, be a source of legitimate satisfaction to those who served on that Committee whilst there is no danger that the recommendations of the Sugar Committee will be overlooked so long as Mr. Clarke who was a member of that Committee is connected with the Department. One of the most important recommendations of the Cotton Committee was the establishment of a permanent All-India Central Cotton Committee with provincial and local sub-committees. This Committee has now been established and Mr. Clarke considers its establishment as a notable factor in the development of cotton production in India. The Agricultural Department in the United Provinces is certainly represented on it, for, Mr. Burt, formerly Deputy Director of Agriculture in the Central Circle, is its Secretary and Dr. Parr, Deputy Director of the Western Circle, who has made a special study of cotton problems, is the provincial representative. The constitution of a provincial committee to work in conjunction with the Central Committee has been approved. The investigations of these various Committees should before long be able to throw light on the attitude the Agricultural Department should adopt in

regard to the spread of Aligarh white flowered cotton. This is a variety which yields well and has a high percentage of lint to *kapas* (lint and seed combined). Its lint is of excellent colour and before the war the extra profit per acre resulting from its cultivation was estimated by Dr. Parr at Rs. 15. Its great defect is its shortness of staple which makes it of little or no value to the local spinning industry. Before the war, the market for it was found on the Continent of Europe where it was used for mixing with wool. The Indian Cotton Committee considered it a mistaken policy for the Agricultural Department to promote its spread until it had been definitely established that no better variety of *neglectum*, the family to which it belongs, could be found which would pay the cultivator as well. Mr. Clarke evidently holds that this recommendation was too sweeping. Though circumstances have changed since the war and the Continent is no longer as good a market for Indian cotton as it was, Aligarh white flowered cotton still gives a larger profit per acre than any cotton previously grown in the western districts of the United Provinces. Mr. Clarke says that the demand from Zamindars and cultivators for assistance in procuring a supply of seed is so insistent that it cannot be ignored by the Agricultural Department, which would not be justified in taking steps to make the cultivator grow any variety of cotton except that which pays him best in local conditions. In this regard for the interests of the cultivator he has, of course, the support of the Cotton Committee which, however, held that the long view must be taken and that, in the end, it would be found that the Aligarh white flowered variety did not pay the cultivator best and that, unless the demand for export revived, the main object with which it would be grown would be for mixing with superior varieties. It is for the Central and Provincial Committees to decide whether the demand for export is such as to justify the activities of the Department in spreading the variety or whether it should now tackle in real earnest the problem of finding a better variety of *neglectum* which will pay the cultivator as well or better. Mr. Clarke is on sure ground when he says that it is incumbent on his Department to limit its efforts to assist the growth of Aligarh white flowered cotton

to the tracts where it is at present grown and to see that it is not spread by departmental agency to tracts where a superior variety of cotton is produced.

The recommendations of the Indian Cotton Committee have been closely followed in regard to other work on cotton. The distribution of the best of the Cawnpore varieties is being continued but, unfortunately, the Department is "up against" the difficulty which besets all its efforts to improve cotton cultivation in the United Provinces, that of irrigation supplies. Owing to a shortage of water at the time of sowing, the area under this variety during the year was only 3,380 acres against 8,100. On the other hand, the cultivation of American cotton has been taken up with success in one tahsil of the Aligarh district. One promising feature of the work in connexion with American cotton is that there is now an established market for it in Cawnpore where the prices offered for it are quite independent of those for indigenous cotton and are subject to less violent fluctuations. Last year, cultivators of American cotton obtained about Rs. 4 per maund for their unginned cotton over that ruling for indigenous varieties. In JN 1, a selection from the indigenous cotton of Jalaun, the Department has a variety which has been favourably received by spinners and if this spreads in areas for which it appears suitable, it should go far to assist the mills to meet their needs locally.

The botanical survey of the indigenous cottons of the Provinces commenced in 1919. Moradabad was the district first selected for operations. It proved a disappointing one for little or nothing was found with any outstanding merit. Saharanpur, which was next taken up, was much more promising, 900 samples were collected, some of which gave lint of excellent quality and about 500 of these are being grown in the botanical area at Cawnpore for systematic analysis and selection. The appointment of a Botanist for the special study of indigenous cottons has been sanctioned but has not yet been filled. An Entomologist has been appointed and one of the problems to which he will doubtless devote his first attention will be the ravages of the pink bollworm.

The most important recommendation made by the Indian Cotton Committee in regard to the improvement of agricultural practice in the United Provinces was that efforts should be made to promote the adoption of the practice of sowing in lines and intercul-

ture. A demonstration of the advantages of this method of sowing was carried out in twelve villages during the year and it was found that the average outturn of unginned cotton per acre was 7.54 maunds against 5.50 maunds for cotton sown broadcast. It is, therefore, not surprising that the cultivators are being rapidly convinced that sowing in lines will greatly increase their profits especially as it is easily done without extra cost by dropping the seed in a furrow behind a country plough, every alternate furrow being left unsown.

A comparison of the last four paragraphs with the chapter on the United Provinces in the Cotton Committee's Report will show that practically the only recommendation made by the Committee on which action has yet to be taken is the one proposing that the Bundelkhand districts should be formed into a separate agricultural circle. The Provinces are still divided into four circles only, charges which are far too large and unwieldy as the Government review frankly admits. It is intended to split them up into ten ultimately but, pending this desirable consummation, it is hoped that it will soon be possible to open three new circles, of which Bundelkhand will be one.

The Report of the Indian Sugar Committee was not received until after the close of the year but Mr. Clarke refers to its conclusions at some length and considers that they will form the basis for a sound policy for future departmental work on sugar. We are glad to find that a point on which great stress has been laid by the Committee is the need for the demonstration of agricultural improvements on the cultivators' own lands for this is a need which we have emphasised almost from the first number of this Journal. An effective scheme for carrying out demonstration work on these lines has been worked out for the Central Circle which has 25 agricultural assistants with fieldmen and trained labourers. During the year, 2,554 demonstrations of improved methods were made on a total area of 24,044 acres in eleven districts. 15,059 acres were under wheat and 4,199 under cotton. Mr. Clarke adds that the figures enable an idea to be formed of the scale on which operations will be necessary to produce a noticeable effect on the 34 million acres under cultivation. But it must be remembered that the work grows like a snowball and that if even only a few cultivators in the neighbourhood of each plot on which there has been a successful demonstration

adopt the new methods, it will not be long before the area affected can be estimated in millions of acres.

The acreage under cane in the United Provinces is almost exactly half the total for India and more than three times that for Java, but whereas the average outturn of sugar in Java is well over four tons an acre, that of gur in the United Provinces is less than a ton an acre. And gur is half molasses and waste. It is true that the situation of the United Provinces outside the tropics render their cane problems of peculiar complexity but Mr. Clarke's own work at Shahjehanpur has shown that, given adequate supplies of water and manure, superior thick and medium varieties of cane can be substituted over large areas for the thin canes at present grown. Mr. Clarke mentions the Java variety, J 247, the Mauritius variety, M 16, and a Shahjehanpur selection, S 48, as specially suitable to the conditions of soil and climate prevailing in Upper India. A survey of the indigenous canes has shown that some of them possess marked superiority over others and that much improvement can therefore be effected by the distribution of pure line selections. But, as Mr. Clarke says, better varieties alone are not sufficient to secure an effective response to the Department's efforts to increase the outturn of cane. Facilities for intensifying the cultivation and the working up of the crop require attention. The construction of the Sarda Canal which has recently been sanctioned should exercise a far-reaching effect on cane questions in the United Provinces for, though the Sugar Committee anticipate only an additional area of 100,000 acres of cane on the canal, the tract through which it will pass is one which affords great possibilities both for the introduction of better canes and of improved methods of cultivation. Whilst it is probable that there will be an increase in the number of factories manufacturing white sugar direct from cane in the United Provinces, of which there are now only five against 186 in Java, it is certain that a very large proportion of the cane crop will always be made into gur. The immediate problem before the Department is, therefore, to improve the methods of manufacturing gur and the solution advocated by the Sugar Committee and accepted by Mr. Clarke is the introduction of small power mills for crushing combined with the boiling of juice in improved furnaces. The one will relieve the cattle of the terrible strain im-

posed on them by the present mills and enable crushing and boiling to keep pace. The other will prevent the losses due to the imperfect combustion of the gases and the inefficient absorption of heat, and this, in turn, should enable the furnace to be kept going on the megasse (cane stalks after the juice has been extracted) and cane trash alone.

Wheat has needed no Committee to suggest lines of improvement. In the early days of its development, the Agricultural Department was fortunate in obtaining Pusa wheats which were admirably suited to the local conditions. The area under these was estimated at 100,000 acres in 1916. In 1918, it had increased to a quarter of a million acres. Now it can no longer be estimated accurately by departmental agency but must be very nearly half a million acres. Even when grown under the cultivators' conditions, the Pusa wheats give a much better yield than the local varieties but, as with improved cottons and canes, their great characteristic is their power to respond to better treatment. What can be done when they get this is shown by the yield of 37 maunds to the acre obtained in one instance last year, the highest yield so far on record.

We have already mentioned the vigorous campaign of instruction which is being carried on in the villages. In its propaganda work, the Agricultural Department continues to receive the most valuable assistance from the private farms. The first impetus to the establishment of these was given in Oudh by Mr. Sharma, the Deputy Director of the Eastern Circle, but the idea caught on rapidly in the other circles and the Central Circle now has 124 of them. How profitable farming can be made is demonstrated by the figures supplied by Mr. Sharma. One farm of 18.75 acres on which the capital expenditure was only Rs. 650 obtained a net profit of Rs. 1,700 in 1920-21, the receipts being Rs. 2,500 and the expenditure Rs. 800. This is an exceptional figure and more near the average are the figures for two other farms of 16.5 and 18.15 acres which on a capital expenditure of Rs. 1,930 and Rs. 380 gave net profits of Rs. 478 and Rs. 705 respectively. It is sad to see that the working of some of the farms was gravely hampered by agrarian troubles. These farms are taking an ever increasing share in the work of spreading improved seed. The Co-operative Department is said to be doing its best to help but in view of the pessimistic note struck in the recent

co-operative reports from the United Provinces, we should have been specially interested to hear from Mr. Clarke how far it has succeeded in lightening the burden of his Department. In connexion with propaganda work Mr. Clarke has some very sound remarks on the parts which should be played by experimental and district farms in agricultural development. He urges that it is useless to erect seed stores unless there is need of improved varieties of crops to be put into them. New methods of cultivation cannot be imported wholesale from other countries: these have to be worked out in great detail to meet the special conditions of soil and climate existing in India. Improved seed must be grown in the first instance and new methods of cultivation worked out on experimental farms and Mr. Clarke therefore rightly insists that the true interests of the Provinces will be best served by raising the standard of work of the experimental and research farms to the highest possible pitch of efficiency and by increasing rather than diminishing their numbers. Demonstration farms stand on quite a different footing and we unhesitatingly agree with Mr. Clarke that the best—we should have said the only—test which can be applied to them is that they should show a profit and that those which fail to do this should be closed. That even a research farm can be run at a profit is evident from the figures for Mr. Clarke's own farm at Shahjehanpur, the receipts from which last year exceeded the expenditure by nearly Rs. 7,000.

Both the Cotton and the Sugar Committees laid stress on the benefits to the cultivation of cotton and cane which would result from a vast extension of tube wells in the United Provinces. The Sugar Committee indeed recommended that an entirely separate branch of the Agricultural Engineering Department should be formed to deal with well-boring and pumping installations. The necessity for such a branch is borne out by the figures in the Report and by the statement in the Government review that the demand for tube wells is at present altogether beyond the powers of the Agricultural Department. The Government are, however, fully alive to the desirability of strengthening the Department. A large grant for equipment and for the building of a workshop has been sanctioned and three Assistant Agricultural Engineers have been appointed.

Considerations of space prevent us from discussing at all fully the very interesting

questions Mr. Clarke raises in regard to agricultural education. Applications for admission to the four years' diploma course and the two years' vernacular course at Cawnpore Agricultural College very greatly exceeded the number of places available and the cheering feature is that most of the students are connected by close ties to the land. It seems probable that, in the near future, the vernacular course will no longer be given at Cawnpore. A committee appointed to consider the desirability of affiliating the College to the Allahabad University has reported in favour of affiliation and when this comes about, the vernacular classes for which the costly staff and equipment of a University are not required will be taken over completely by the recently established school at Bulandshahr. A difficult question which is raised by the report of the Committee just mentioned is that of the relationship between teaching and research at the Agricultural College after affiliation. The Committee has recommended that the teaching staff of the College should be separated from the research staff as a necessary consequence of the association of the College with the University but it is proposed that the research work on general problems should be continued at Cawnpore in laboratories assigned to the expert officers of the Agricultural Department by mutual arrangement with the University, and that some officers such as crop specialists should be provided with small research stations and laboratories situated in tracts where the crop under investigation is an important one. Our own view is that it is a mistake to separate research work from teaching and that both benefit by association. Research work is apt to become too much in the air and teaching to become mechanical and lifeless when the two are disconnected. Separation is not a necessary consequence of affiliation, witness the Poona College. It may be true that the present arrangements at Cawnpore by which the scientific officers are responsible to different masters for two distinct branches of work, to the Governing Body for teaching and to the Director of Agriculture for research work is unsatisfactory but as the Director is a member and presumably the most important member of the Governing Body, no real difficulty should arise. The question, like every other question connected with agricultural education, is, however, too controversial for discussion at the end of a review which has already run to too great length.

Some Stray Thoughts on our Lower Secondary Curriculum

By S. Tirumalai, M.A.

Education, says James, consists in the organizing of the resources of human beings, of powers of conduct which shall fit him to the social and physical world. True education consists in the development of the whole man with his many phases—physical, intellectual, aesthetic, social and religious. Its aim must be to turn out a citizen who will be of great help to the progress of the State. India needs such men and schools must produce them. Such men are to be made out of children. Children contain in germ all that they will be in manhood. The well-being of a nation depends on men and the well-being of men depends on children. It is the work of the teachers to turn out such men. This is difficult but not an impossible task. Children are plastic and we can turn them as we desire. A teacher, if he takes up the training of the children of man, must, as our revered poet Rabindranath Tagore says, cultivate the spirit of the eternal child. Teaching is the noblest task ever assigned to man. It is the noblest and holiest of all professions, though 'sorriest of trades'.

It is said almost *ad nauseum* that the success of the future of India depends on the younger generation and from this it is logically argued that upon the teacher rests the heaviest responsibility. The responsibilities of teachers are great. They deal with a living paper, yet to be deciphered and not with dead papers, written in ink. They have to mould the characters of young boys, who are to be the future citizens of the State. Every day they have to watch them, move with them, live with them.

If boys are to be trained to become citizens of the State, then they must be given a proper training. Education imparted to them must be of a kind as will make them real patriots. This is possible only when the aptitudes of the boys are taken into consideration. This training can never be arrived at by young boys being crammed at school with ready-made knowledge, with heights of mountains and depths of oceans. Unfortunately our present curriculum disburdens on young shoulders a mass of erudition. Care is not taken to provide such information as would suit the aptitudes of children and naturally

children get disgusted and it is this disgust which they rightly exhibit in the class, which is often identified with breach of discipline, and, alas, poor children are subjected to punishment varying with the eccentricities of masters. Any course of teaching, if it is to be fruitful, must respect the aptitudes of boys.

Before dwelling upon what such a course ought to be, I will attempt to picture to the readers the condition of our boys. I agree that, before the school-going age, good or bad habits take their habits at home and its surroundings. We see boys who are unable to dress their hair, to tie their own clothes and very often button their coats. We see children employed in Drawing, while the teacher had to mend their pencils lest they should cut their fingers. They are required to dress well, but they do not know how to close up a stitch or fix a button that has come off. This is a deplorable state of affairs. I do not exaggerate accounts but these are what we see. It is not uncommon to see boys dirty before evening their dress which they wore only that morning. I am far from saying that these must be taught in classes. These must be taught by the mothers of children. When such is the state of our boys, it is to be pitied that these young brains are crammed with all sorts of earthly subjects. In every respect all minute details must be got by rote. This system rapidly squeezes out the natural genius possessed by our young boys. Uninteresting *ideas* are committed with tears to memory, while interesting *things* which would be taken in pleasantly by boys are consistently ignored. At present it is no uncommon sight to see a grown-up boy with L. S. education seeking some employment too high for his attainments, thus trying to make his education the means of his livelihood. We also see boys who have had a L. S. education allow it to rust, while engaged to learn a trade which does not call for the knowledge he had learnt at schools. We see also a class of men, who are failures in life—though a minority—yet a drag to the progress of society.

Let me know detail, though in a scrappy and inadequate manner, what a course of study ought to be. Before attempting this,

it is worth while to ponder over the psychological faculties of children, the good features of which must be developed by true education. Elementary notions of child psychology will give us certain marked features common among children. The most noticeable feature is their spontaneous activity and creative instinct. We have seen children making a balance with the help of the two halves of a lime fruit and a broomstick and imitating the shopman in weighing things therewith. We have also seen boys playing at railway trains in streets using semaphores of their own manufacture. These show us that they are endowed with an instinct for constructive work, of course imitating their elders.

Another feature is their delight in examining things and handling them. We have seen young babies stretching their hands when objects are shown to them. If they are not given to them, they begin to weep. Children attempt doing new things by their own efforts and take delight when they have made something new, however crude it may be. Another striking feature is their dislike for long lessons. Boys cannot apprehend or retain abstract notions. Unfortunately this is the method of teaching in vogue at present. Theory of knowledge tells us clearly that we apprehend things first and concepts only at a later stage. Boys learn about a horse, when a lesson on horse is given to them with a horse before them, much better than they would do when doses after doses of abstract notions are forced in their throats. I have tried, in the immediately foregoing paragraphs, to lay before the readers, in as brief a manner as possible, some of the marked features we see in common among children. True education must *draw out* the good faculties and prepare the boys for the battle of life. Only when education satisfies the natural desires of the boys, it is a pleasure and delight to them. The course ought to make use of the natural tendencies that dawn and develop in the period of boyhood. This is the time when the boy is seen going out in the gardens, playing on trees, on hill sides and river beds, either trying to catch fish or swimming in the water. This is the period when the boy communicates with Nature, is in love with Nature.

Does the present system afford facilities for boys to come in touch with Nature? Are our primary and L. S. Courses on the right lines? Personally I am disposed to say an emphatic 'no'. Out of the five long hours

they spend at school every day, a far too large proportion is spent in acquiring—can I say acquiring—passively of information and little or no attention is paid to training the observation or to the use of fingers and hands. According to psychologists the period between the 8th and the 12th year is the 'stable' period, when the boy's physical capabilities are exactly sufficient to express fully his mental life. "Intellectually this is an extremely practical age. The boy's mind is set upon the needs of action. It runs upon making and doing; he is at the best period of his life for learning to make and do." We all know to our regret what little opportunity is given to our boys in this direction. I cannot here resist the temptation of quoting from Prof. Venkatanaranappa's presidential address on the occasion of Tumkur Collegiate High School Day Celebrations held in 1920. "I set the students of the Central College some simple questions to test their power of observation. One of the questions was—'What is the kind of flooring of the Central hall of the College?' It is remarkable that so few could give a correct answer, though they were walking along the floor any number of times every day for so many days! A good many stated that the floor was paved with Cuddapah slabs, though the flooring is of wood." This shows clearly how far facilities are given to boys in our present system of Education to train their power of observation. In another place he says "the blame for this state of affairs rests primarily on the parents, most of whom never trouble themselves about their children's progress and are quite satisfied if they pass the examinations." Will it be audacious on my part to say here that unfortunately most of the parents themselves are products of the same education, and so they are blind to the faults, not because they do not see but because they cannot see. A course must be such that, for such boys as are thrown out of school by force of circumstances at this stage, with an additional training in gardening and agriculture, it should be made to serve the purpose of controlling and regulating his earning and expenditure. I will devote the rest of my article to a sketch of a curriculum for the L. S. course, which, I believe, will go a long way to remedy the existing defects in our education.

I will divide the sketch into 5 heads as to suit (i) physical (ii) intellectual (iii) aesthetic (iv) social (v) moral and religious.

I. *Physical*.—Our boys partly owing to

heredity but chiefly owing to lack of supervision are conspicuously weak. It is not necessary that boys should be forced to play cricket. A boy must be made to be clean, well set up and vigorous. In England Government openly state in their prospectuses that preference for services will be given to youths with athletic qualifications. With stronger and better developed bodies, our boys would have been more fortified against the last influenza scourge. All this is due to our defective education which attaches all importance to the intellectual side. The most simple and elementary methods of securing sound health are ignored.

Sariramadyam khalu dharmasadhanam—The body is the first of the aids to Dharma. This is the period when life powers are directed towards the enlargement of the frame and to dissipate by over-mental work is criminally detrimental to the growth of the body. Regular supervision of games and drill should form an integral part of the curriculum. Even half-an-hour's drill might preserve many a boy's health. With a weak physical body a boy will be a miserable failure in studies and even in life.

II. *Intellectual*.—I am of opinion that during this period the intellectual qua intellectual aspect of the course must form a small portion to the whole curriculum. Even here subjects appealing to the intellect of our boys must be taught in such a way as to appeal to their tastes. I will here attempt to point out how this could be done, taking English, History and Geography into consideration.

English.—During this period much of the English work must be taught in oral composition classes. The aim of composition is to train boys to think and express their ideas clearly. The teacher must appeal to the intellect through the senses. "Pictorial knowledge is a great formative force in childhood and youth." Nature's help must be taken to stimulate and train their senses. Simple pictures may be shown to the class and information relating to these pictures may be got from boys by putting short and simple questions. Till a boy comes to Form II, composition must be mainly oral. Written work may be attempted in Form I in the latter half of the year after a whole story has been told by the pupils, when the teacher might require them to write down the same. The reason why oral work is to be insisted upon is that the work of correction is easy, for the mistake can readily be pointed out and corrected in the presence of boys. This is very healthy. A boy's mistakes must be

allowed to be corrected by other boys. In Form III written composition may be more frequent but care must be taken as regards choice of subjects, which may be a narration of a story read, of an excursion and so on. Grammar must be taught in oral composition classes.

History and Geography.—In this period, it is not necessary that our boys should know all the towns, rivers, etc., in the world. It is all a waste of mental labour. Geography must be so taught as "to stimulate the imagination of the pupils, to enable them to picture to themselves things which they have not seen and which they cannot hope to see." Mackinder, in his "Teaching of Geography and History" talks of six roads: (1) *Drawing and* (2) *modelling*, which will give rise to mental images. (3) *Nature Study* including animal and vegetable life. (4) *Circulation of water* from sea to sky and back. (5) *Tales from Wonderbook* and (6) *Sun*. Nature Study affords much scope for Geography teaching. The boys may be asked to record whether the day is hot, bright or cloudy, whether there is rain or not. They may be told the conditions of the growth of plants and made to observe that temperature, moisture and light are essential for their growth. Thus all the lessons must be based on observation and experiment. The stories of the Wonderland give us the lives of the people of different regions of the world as determined by environments, their adventures in land and sea. Boys are especially fond of hearing about people and not about places. Geography must be taught as a history of peoples, their lives, adventures, etc. Such a teaching would appeal to boys much better than abstract notions of "California is famous for its gold mines" and the like. Likewise History too must be taught in the form of stories of great kings and men. If possible an album containing picture post-cards of great men may be preserved and their life-sketches given to boys, here and there alluding to their importance and works which contributed to the growth of the country. This may afford opportunity to inculcate in the minds of young boys their high and noble ideals. Picture post-cards showing the famous temples and buildings, as for example Halebeid and Seringapatam would be found to be of much use in giving the importance of these places.

III. *Aesthetic*.—"Taste is one of the highest of human privileges and the discrimination that is able to perceive and enjoy beauty is one of the real delights of life." Aesthetics

are entirely neglected in our schools, except for the teaching of drawing. A man loses half the enjoyment of his life when he has no eye for the beauties of Nature and no ear for the melodies of music. Ruskin says "without these (beauties) no one can be educated humanely. He may be made a calculating machine — a walking dictionary — a painter of dead bodies — a twanger or scratcher on keys and cutgut — a discoverer of new forms of worms in mud. But a properly so called human being — never."

Drawing, Clay modelling, Paper work, etc.—Drawing is one of the means used for the expression of ideas. The content of Drawing for boys must be simple and attractive. Boys must be given to draw familiar things that come across their daily life — a bench, a chair, etc., rather than a natural scenery. Clay modelling is an interesting occupation. Clay may be got anywhere and boys may be taught to prepare good clay for the purpose. Good models may be preserved in a shelf, which would create a healthy rivalry and also interest for the work among boys. Next comes paper work which includes paper tearing, cutting, folding, etc. Paper weaving too, may be taught. They may be taught how to prepare envelopes, paper baskets and the like.

Gardening.—Gardening is a field for practical demonstration, where boys can experiment upon what they saw and heard in class-rooms or outside. Boys take interest in tending plants, watering them and removing the weeds. They make the plots clean, grow vegetables and flower plants. The merits in this training cannot be over-estimated. It makes the boys observe nature and play with nature. Schools may have small gardens of their own. Young boys will have more time at their disposal for this useful and interesting study.

IV. *Social.*—School is a place where, in addition to book-learning, boys are taught sympathy and love towards animals and brotherly feelings towards other boys. We see boys stoning dogs and pulling off the wings of insects. This is all due to want of sympathy, which is due to want of imagination. Some birds, parrots, dogs and other common animals may be kept and reared in schools. Boys will watch them every day and come to know of their habits. This would stimulate in their minds love for animals. The next noticeable feature in schools which goes to create brotherly feeling is play, the ethical aspect of which cannot be over-estimated. How in play the moral side of boys is cultivated; how games afford opportunity for courage,

self-denial, obedience, self-control and the pursuit of an ideal; how a social feeling is gradually developed in the minds of boys; how a boy subordinates his individual pleasure to the pleasure of all — are all too well known. While talking of social feeling, the value of excursions cannot be over-looked. Excursions to interesting places near by will be of both educational and social value. Excursions would avoid an inevitable tendency to stereotyped routine and monotony and give a most refreshing enjoyment of the country.

V. *Moral and religious.*—The seeds for moral and religious instruction must be sown in early boyhood. The noblest function of education is to develop character. Harishchandra, Savitri, Gokhale, Mahatma Gandhi are all great because they are men of character. Character knows no distinctions of caste or creed. The saint Nandanar was of the Panchama class. The useful instrument for moral instruction is the story. It is the story that cultivates the imagination. A narration of stories will reveal to the boys the presence of God and His miracles and would lead them to a sound understanding of God. India is not wanting in epics which may well be utilized to teach the principles of religion and morality. Boys, while hearing the stories, will clearly see how kindness is rewarded and vice punished. The ideals of mercy, truth, justice, etc., are all clearly brought to their minds. Even lives of great men of history may be narrated to present ideals to the boys.

In the foregoing paragraphs, I have given as far as lies in my power, a curriculum for the L. S. course, which may with advantage be adopted. Before I end this article, I would like to say a few words about the duration of work each day in the L. S. classes. Boys are kept in class every day for a longer period than what is necessary to serve any useful purpose. The present system of beginning class work at 11 A.M. is highly objectionable on various grounds. In a hot climate like ours, classes should be arranged in the cool hours of the day, say from 8 to 10 A.M., and 3 to 5 P.M. Even young boys are having at present 5½ days' continuous work a week. It is enough if they have 4½ days' work with holidays on Wednesdays and Sundays. One of these days may be spent on excursions to places near. They may have three periods in the mornings and three in the evenings. In the morning, ten minutes may be allotted before class work for common prayer and they may have three periods of 30 minutes each with ten minutes' interval after the first and second

periods. In the evenings too, they may have three periods of 30 minutes each with ten minutes' interval after all the three periods. Every class must have drill daily between 5 and 5-30 P.M., except on holidays, under the direct supervision of their respective teachers. During the intervals, boys should be allowed to ramble freely in the school compound. Then only their minds will be fresh at every period and they will delightfully attend to what is said.

Geddes Economy Committee.

The Geddes Economy Committee have presented their report; it is understood that the sum which the Committee propose to lop off is about two hundred millions, which will put the Budget straight and, according to the more optimistic, even permit a little reduction of the income-tax.

There have been various speculations, many of them obviously ill-informed, as to the departments to be retrenched. Most of the economies will be approved by the public, but one is certain to raise verbal opposition. It is known that a large cut is to be recommended in education, and although this will be popular in reactionary circles, it will be hotly disputed everywhere else. What the country wants is more, and not less, education, and no amount of argument about "cutting one's coat according to one's cloth" will conceal the fact that the real idea behind the supporters of drastic retrenchment in this department is the old and delusive belief that education is a danger. There promises to be a pretty controversy over this matter next year; and indeed Mr. Garvin has already opened the attack by remarking that a nation which can afford to spend four hundred millions annually on drink can afford to educate its children properly.

Below we give further details.—

The Geddes Committee, of which too much has been spoken and written of late, recommends the appointment of a Minister of Defence to administer the Navy and Army and Air Force, reductions of 35,000 in the personnel of the Navy and £21,000,000 in the Navy estimates exclusive of any saving due to the Washington Conference, 50,000 in the personnel of the Army and £20,000,000 in army estimates, £5,000,000 in the Air Force estimates, and £16,000,000 in Education.

The Geddes Report further recommends a reduction of £2,500,000 in the Ministry of Health and National Health Insurance and the appointment of a committee of experts to simplify unemployment insurance

Something like the foregoing, I believe; ought to be the course for young boys. There are many advantages that will accrue from such a course. We will have a set of young men with well-defined powers of earning a livelihood. Agriculture and industry will not be, as they are now, neglected. We will have a set of trained men who will participate in the attempts at social and political uplift of our motherland. May God give us such men.

and to investigate the possibility of abolishing employment exchanges and a Ministry of Labour. A reduction of $3\frac{1}{2}$ millions in the Ministry of Pensions and the abolition of the Ministry of Transport and the Department of Overseas Trade.

The report concludes that, in addition to reductions of £75,000,000 recommended by the Departments themselves, the committee suggests another reduction of £75,000,000.

The report says that, with the existing overlapping and duplication in the fighting services, full economy cannot be realized until co-ordinating authority in the shape of a Ministry of Defence is created. It says that the Naval estimates provide man-power on a lavish scale and reduction can be effected without interfering with the manning of the fighting ships. The report points out that the Admiralty's shore establishments are larger than pre-war and similar lavishness in man-power exists in the Army estimates. Reductions can be made without reducing the Forces employed on Foreign service and still lower estimates should suffice in subsequent years. Air Force units allotted to the Army and Navy should be reduced by $8\frac{1}{2}$ Squadrons. If enforcement of suggestions is delayed, the savings cannot be realized in the coming year.

The second last section of the Geddes Committee Report says that the cost of Education, Health, Labour and Age Pensions have risen from £86,500,000 to £243,500,000. The Expenditure on Education is far in excess of what the country can afford. The minimum age of children attending state-aided schools should be increased to 6. The cost of teaching must be reduced and free secondary education restricted. The Ministry of Health's housing scheme is costing the country £10,000,000 annually. These houses must be sold. The report concludes that further large savings are possible in the adjustment of the Navy Estimates as a result of the Washington Conference.

Battle of the Tongues: A Reply.

By Prof. R. P. Sabnis, M.A. (Cantab.), New College, Poona.

I must confess I was not prepared to see 'Lynx's' case going down like a house of cards so soon. I knew that he had a case fundamentally so weak that no amount of skill at reasoning would have made it stand on its legs. It is, however, a pleasant surprise that he has given it up as hopeless as all discerning persons would see from the fact that he has been reduced to the desperate device of indirectly abusing the editor for his failure to suppress my article. He makes the serious charge that the editor has lamentably failed in his duty in publishing 'rot.' The readers are left to infer what tolerance "Lynx" has for views that dare differ from his own. That no first-rate magazine can afford to follow the policy suggested by "Lynx" if it wants to live, is perfectly clear; for no self-respecting writer would stoop to contribute to a magazine edited by one with "Lynx's" standard of generosity.

I do not know what reasons "Lynx" has to pretend that the controversy is not impersonal. To me "Lynx" is unknown and unknowable. He may be the occupant of a throne or more humbly placed. My only concern with him is as the writer of the article "The Battle of Tongues," as a knight championing the English medium. I always refer to "Lynx's" arguments, to "Lynx's" views, to "Lynx's" schemes, and when at all "Lynx" may have been spoken of, it is indicative of some argument or view put forward by him in the same way as 'the kettle' in the sentence "the kettle boils" means the contents of the kettle. What sacrifice is there of gentlemanliness in calling an absurd argument absurd or a ridiculous scheme ridiculous? "Lynx" has very little to say about the issue and very much indeed about my accumulated crimes in being a student of history and economics, a graduate of Cambridge, and a resident of Poona.

It would have been better if "Lynx" had not meddled with my style of writing English, for it is not known that he has been appointed a literary dictator, whose judgments the world must receive kneeling. His article does not reveal his fitness for being the dictator of the English language. Without saying anything further on the point I may merely satisfy his demands for enlightenment. 'Drawing conclusions for the universe' is a picturesque

way of saying 'hastily generalising.' 'Every disaster under the sun' has been illustrated by "Lynx's own list. Our English successors can count on having a larger quantity of fish as a result of our drowning in this way: the fish will have ampler means of nourishment, they will breed rapidly, and absolutely there will be more numerous fish. As regards the difficulty of bridging the distance from inland places to the sea ("Lynx" will do me the justice of admitting that I do not specify which sea in my article). I thought our English-owned railway companies would be glad enough to place their trains at our disposal for a day or two! However I admit that if that expense is to be taken account of, some expense will be incurred! In fumbling with 'a book' and 'books' he has forgotten that *the* best book can be only one, and if the best book is pedantic, it follows by implication that the others are worse still. His threat to fill pages with quotations follows considerably lower down in the article. These extracts can hardly save him from the charge of hasty generalisation in an earlier paragraph.

I shall now justify to "Lynx's" satisfaction certain expressions in my article which have made him simply wild. They are 'a traitor,' 'grovelling,' and 'pitiful waifs.' The readers will find that these words have been carefully weighed and aptly used. Supposing it is decided to adopt the Vernacular medium of instruction in secondary schools immediately or at an early date, is not "Lynx" convinced that it would be an act of thoughtless precipitancy inspired by maudlin patriotism? Does it not mean that the Vernacularists who insist on the immediate adoption of the Vernacular medium are actuated by maudlin patriotism to do this thoughtless act? I have called on "Lynx" to cease making such unworthy imputations by pointing out to him that it would be easy enough for his opponents to imitate his tactics and call him a 'traitor' in exchange. I do not so much as remotely hint that he is a traitor, it would be impossible for a man whom I have described as yearning for the enrichment of the Indian Vernaculars to be a traitor. I have said that he *unwittingly* lays the axe at the root of the tree which he wishes to attain a giant growth. How can his attitude to English be described otherwise than as grovelling

when he flies in the face of Grattan's universally accepted maxim, "No nation can be grateful at the expense of its liberty"? He wants the world to take it from him that the conquest of India by Britain has been brought about by Providence in *His mercy*. Well might he have said to the Negroes in the United States about 1860 if he had lived then that they were being sold, flogged, and murdered by a merciful Providence and that therefore the Negroes had no reason to grumble, but every reason to be grateful! At that rate the humanitarians including Lincoln were a pack of fools as unredeemable as the Vernacularists appear to "Lynx" to-day. If we are going to give up our Vernaculars as media of conveying knowledge because it is a *fact* (?) * that Britain has conquered India, why should "Lynx" of all men take exception to the plan of voluntary death? When that has been carried out, it would still be an act of a merciful Providence. No, "Lynx" goes too far in his worship of the accomplished fact. There will remain no hope of correcting wrongs if this worship were to be made general, and not confined to an individual with the most eccentric ways of thinking. Lastly the description of the Indians of the present as well as a few past generations as 'pitiful waifs' is, I submit, mathematically accurate. Supposing "Lynx" had to characterise a population as numerous as flies which was 'ruled' by a few thousand foreigners; which would court oppression even outside the limits of law; which would allow itself to be treated as worse than cattle in railway carriages; in short for which no humiliation would be too great so long as an existence even though disgraceful could be purchased; by what epithet will he describe it? For once I am ready to abide by his decision.

Coming now to the central theme I have an easy task in showing that being a very cautious writer I had first analysed "Lynx's" article word by word before beginning my answer, and that "Lynx" has not only not read my article even tolerably carefully but has forgotten at least portions of his own article if he had ever read it. The main issue is this: Shall we adopt the vernaculars as the media of instruction in all subjects except English (which will be taught by the Direct Method) in secondary schools, and if possible, even in

colleges? "Lynx's" most profound view may be stated in his own words:—"Will India attain a nationhood by adopting the vernaculars as the medium of instruction in her schools and colleges?" (March-April (1921) No. of the *Journal*, page 164, col. 1.)

"Is the linguistic capacity of any of the *Indian vernaculars* sufficiently developed for their immediate adoption for tutorial purposes even in our secondary schools in the scientific subjects?" (March-April (1921) No. of the *Journal*, page 164, Col. 2), the italics being mine.

It is obvious then that "Lynx" has not always, as he has the audacity to claim or the cowardice to deny, confined his remarks to the three South Indian Vernaculars. Are we to interpret 'Indian vernaculars' as not including Hindi, Bengali, Marathi, Gujarati, and other languages? If "Lynx" had been obliging enough to append a dictionary of his own either at the beginning or the close of his first article, he would have spared me the trouble of writing my last and therefore this article. I should not have dabbled in things of which I could not speak with authority, but left the devotees of the three South Indian languages to fight for them with greater ability than I could be expected to, with my acquaintance extending only to Kannada and that too not far enough. But as "Lynx" has affirmed with all the force that a rhetorical question carries within it, that no Indian vernacular is developed enough to become the medium of instruction even in secondary schools, I took the field against him and smashed him out of his wits.

Similarly "Lynx" has chosen to misrepresent me as desirous of abolishing English in spite of the fact that I have almost fanatically advocated the teaching of English by the direct method and duly thanked it for opening up the knowledge of the West. But careless reading seems to be one of "Lynx's" amiable weakness. Otherwise he would not have attempted to baffle me by calling Newton's *Principia* and Milton's foreign despatches to his rescue with his last breath. I shall be grateful to "Lynx" if he takes the trouble of finding out for me the place where I have represented Newton as a lover of English. I have allowed latitude to Indians to write their books in English as Newton wrote his *Principia* in Latin if they want to achieve immediate fame showing a greater solicitude for the advancement of knowledge than of their own mother-tongue. I have also pointed out the danger: some of the greatest men have failed

* As "Lynx," seems yet to be in blissful ignorance I have to advise him to read Seeley's famous book, "The Expansion of England" to realize that this is *not* a fact, the fact being the conquest of India by Indians, who had not a particle of national feeling.

to drive deep their message in an alien tongue, even Milton would have been a far smaller poet if he had written in Latin his literary masterpieces. It is for the first time that I learn from "Lynx" that Milton's title to fame rests equally upon his official despatches written in Latin though it is not easy to see why "Lynx" should not have requisitioned Milton's Latin exercises at school and college to strengthen his argument to the fullest extent. For reassuring "Lynx" I may at once say that I am ready to see all Indians being able to write a few pages of barely decent English and some Indians being able to beat a vast majority of English writers on their own ground. But let every one beware that it will be his duty to resort to English only under compulsion, and to reserve all his enthusiasm and devotion for his mother-tongue. The abolition of the English medium cannot even remotely retard scholarship in English. If a Dutchman can speak and write Dutch, German, French and English, why should an Indian find it impossible to speak and write besides his own vernacular, Hindi, English, and French or German? Once you abolish the English medium, you remove a great burden from the heads of the boys, and set free their energies for really great tasks.

Lastly, my condemnation of his fad of making English the common language of India calls forth from him a challenge to Hindi why it should aspire to that position. It was clear that proceeding in the direction of English "Lynx" was sure to meet a friend for whom he exhibits in his rejoinder a feeling of disgust — very unreasonably — *viz.*, Esperanto. Why are not the vernaculars to be adopted as media of instruction in secondary schools? "Lynx" answers because there would be a multiplicity of languages bringing a number of evils in its train. The question then is, does not the same evil affect Europe? I say of course it does, and there has arisen a sect which is laudably struggling to restore prehistoric conditions when there was a single language, and which I therefore, recommended to "Lynx" for his patronage. Will it not be as great an advantage for European scientists to write their books in one language by agreement as it would be for all Indian scientists to write their books in English alone? The only trouble is that the scholars of each nation in Europe are too absurdly proud of their mother-tongue to write in any language except their own while many of us like "Lynx" have the truly catholic spirit required for making an attempt to enrich English literature at least

in science in preference to their own vernacular. Then, if you start to compare Hindi and English as competitors for the same position, who will win? That pure Hindi is spoken by 82 millions and can be picked up with incredible ease by about 160 millions more speaking allied languages is a more indisputable fact than the conquest of India by Britain. How many lakhs speak English? "Lynx" will find more details if he cares to have them in any geographical hand-book or statistics published by Government. For the 'foreign' relations between province and province the official language will be Hindi just as French is the 'congressional' language of Europe. The question whether Hindi is as developed as English is entirely beside the point. You have your English to open out the world of Western thought. You have to pick up an amount of Hindi as moderate as Disraeli's knowledge of French, for intercommunication between province and province.

If I may have succeeded in forcing "Lynx" to carry out his own plans for writing various sorts of books in simple, graceful language in his own vernacular rather than distract his energies in the inglorious task of running down Indian vernaculars, I shall regard my labours fully rewarded.

It remains to be seen what measure of his favourite virtues — honesty and courage — "Lynx" possesses in owning defeat and in apologising to the Editor for the unmerited slur that he has cast on his judgment.

[This has become verily a battle of the tongues. As both sides have had their say, this controversy will now cease.—*Ed., M.E.J.*

A special conference of the Associated Chambers of Commerce of the West Indies is about to be held in Trinidad to meet the Imperial Mission now in the West Indies. The Associated Chambers will discuss with Mr. Wood, Mr. Ormsby-Gore, and Mr. Wiseman increased preference for West Indian products in British markets, a trade agreement with the United Kingdom on the lines of the Canada-West Indies Agreement to last at least ten years, protection of West Indian products against the effects of depreciated foreign currency, improved shipping facilities between the West Indies and Britain, need of a West Indian currency, and the need of a Central West Indian Conference to meet in a convenient centre annually to consider matters relating to the progress of the Caribbean colonies.

The Rubber Industry of Bolivia.

The rubber industry, one of the most important in Bolivia, is centred in the Amazonian region of the Republic. Though the first rubber was taken out along the Mamore in 1864 and production amounted to 2,000 arrobas (of 25·36 pounds each) by 1878, the development of the industry on a large scale dates from the eighties. Much of the rubber country was explored about that time by an American. The year 1882 was a great one in the history of the industry, but the depression caused by the outbreak of swamp fever, which followed the floods of 1886, caused a temporary setback. With the rapidly increasing demand for the product, rubber hunters poured into the Beni and Mamore districts, and numerous companies were organized to exploit the resources of those regions. The production of 1898 was double that of the previous year and in 1900 reached the highest figure attained until 1911. However, the best returns from the business were during the boom years from 1909 to 1911, during which period rubber reached the maximum price of 12 shillings per pound. From that time the decline in the returns was constant until 1915, but the yield of 1917 brought only about two-thirds as much as did that of 1910. By 1917 the East Indian plantations were producing and Amazonian rubber had taken the second place in the world market, at least in so far as quantity was concerned.

According to a report on the industry by the United States Trade Commissioner in Bolivia, rubber is found in the Territory of Colonias and in the four northern-most Departments of the Republic — El Beni, La Paz, Cochabamba, and Santa Cruz. The Beni district has steadily declined in relative importance as its stock of trees has been worked out, and the Territory of Colonias has become the most productive rubber region in Bolivia. Rubber trees are found in large quantities along all the rivers of Colonias, including the Acre, Abuna, Orton, Madre de Dios, and their tributaries. Development in all these districts is comparatively recent, the rubber resources of the Abuna not having been worked until 1904. Most of the gomales, or rubber plantations, of El Beni are along the lower reaches of the Beni and the Mamore, in the Province of Vaca Diez, and to a lesser extent in that of Yacuma; there are also important fields in the Itenez Basin. The rubber districts of Santa Cruz are located in the provinces of Nuño de

Chavez and Velasco, and lie mostly between the San Miguel and the Paragua. San Ingacio and Concepcion are the chief centres of the rubber business of this part of Bolivia. The rubber industry of the Department of La Paz is restricted to the Province of Caupolicán and to a much less degree to those of Larecaja, Munecas, and Nor Yungas. The comparatively unimportant gomales of the Department of Cochabamba are situated in the Province of the Chapare in the basin of the river of that name and in the basin of the D'Orbigny.

The highest grade of Amazonian rubber, known as Para fine, is derived from the hevea tree, which stands from 30 to 40 metres (metre = 3·28 feet) high and may attain a diameter of a metre or even more. An inferior grade of rubber is extracted from the caucho tree (*Castilloa elastica*). The product is sold on the market as caucho. The Caucho trees that are worked are generally from 30 to 50 metres high. Contrary to the procedure used with the hevea, the caucho must be cut down in order to obtain the sap. The rubber known as ceara is extracted from the manicoba tree (*Manihot glaziovii*), which is also found, though not in great numbers in the Bolivian forests.

The rubber trees do not exist in solid stands, but are found scattered throughout the general forest. The belts along the rivers where they occur seldom extend inland more than 10 or 12 miles. The tree prefers low ground in the neighbourhood of swamps and watercourses, where the moisture is retained in the ground throughout the year, and it appears to thrive best on land that is inundated about once every three years.

The methods of gathering the rubber used by the Bolivian seringueiro, or extractor and coagulator, are much the same throughout the rubber districts of the Republic, though some improvements have been made in the procedure of extraction during the last few years. Each seringueiro or picador is assigned an estrada of 150 trees, which he is to work. Every day during the season he goes the rounds of his estrada beginning his labours about daybreak. With a long-handled hatchet he makes from 6 to 12 incisions in the bark of the tree as high as he can reach on the trunk, and under each incision he places a tin cup into which the latex or sap flows. It requires about three hours to make this first round of the estrada, and after a short rest the seringueiro makes a second round of the trees to

collect the latex from the cups. He empties the latex into a bucket and carries the proceeds of his morning's work to his encampment for coagulation, which is accomplished by a smoking process.

The contents of the bucket are poured into a basin and the latex poured over a stick which is revolved in the dense smoke produced from hard palm wood or palm nuts burned in a small oven. The latex coagulates rapidly in this smoke and gradually forms a ball, which is taken off when at a convenient size, about 40 or 50 pounds, and placed to dry under a roof of palm leaves. In this way the characteristic Para rubber balls are produced, and an incision will show the layers made by the turning of the rubber during the process of coagulation.

Each day the workman makes the incision on the tree an inch or two lower down on the trunk until the roots are reached, when the tree is left to rest until the next year. Trees are worked continuously during the rainy season of each year for two or three years, and then are not worked for an equal period. The life of a tree which is under exploitation is from 15 to 30 years, largely depending on the care taken in making the incisions. Those made by a careless picador will reach below the bark of the tree and injure its vital parts, thus causing it to die before its natural term of life.

Of late years experiments have been made with the so-called herring-bone system, which is used on the plantations. By this method a knife with a short convex blade just wide enough to enter the bark is used to make a long, vertical incision about 4 feet in length. A number of parallel lateral incisions are then made on each side of and terminating in the central incision. The latter serves as a kind of trough through which the latex from the lateral incisions flows down the side of the tree and out through a small spout into a bucket. This method preserves the tree from the dangers which result from the deep incisions made by the old system in which the hatchet is used.

On the arrival of a consignment of rubber at Manaos or Para, a bolacha or sample ball is cut through several layers with a knife for the purpose of classifying the lot. There are eight classes, according to this preliminary inspection, though the rubber is generally shipped as of two classes. The eight classes are as follows: Fina, fina flaca, entrefina, entre-fina-flaca, sernamby en rama, sernamby virgen,

sernamby de caucho, and caucho. However, these are exported to the foreign market as fine or ordinary. The rubber known as fine hard Para is the prime product of the latex of the hevea. Sernamby is second quality rubber, and, though a product of the hevea, it contains impurities which mar its value; it is sometimes made of the residue after the preparation of the fine Para. If rain has fallen in the cups while the latex is being collected, the product will be classified as sernamby. Caucho is the product of the caucho tree and is altogether a lower grade of rubber.

The fact that Bolivian rubber is either classed as Para or Mollendo on the foreign market does an injustice to Bolivia, against which Bolivians have long protested. Amazonian rubber is known to the rubber trade only by the ultimate port of shipment, which is generally either Para, Brazil, or Mollendo, Peru. The rubber from the country about the lower reaches of the rivers is exported through Para, and that from the Beni headwaters is sent out through the Pacific port of Mollendo.

The Amazonian rubber industry, including of course, that of Bolivia, has been seriously threatened by the rapid development of the East Indian plantations. Though realizing the menace, the South American rubber interests, says the Trade Commissioner, appear to have done little to meet it. A few Bolivian companies have considered the establishment of plantations, and at least one prominent rubber grower has actually planted some trees, but the movement has progressed no further. Meanwhile, owing to their more economical methods, the plantations have rapidly gained control of the world rubber market.

British trade is affected by the efforts that United States exporters are making to cultivate business relations with New Zealand. In 1920 the number of different trade publications sent to the United States Consulate-General in Auckland for information and distribution was upwards of 100, besides a considerable number of daily and weekly newspapers. During 1921 the number of these publications was largely increased, and it is claimed that they have done excellent propaganda work. The transference of the Consulate-General to Wellington and the continuance of Auckland as a Vice-Consulate will enable both offices to make use of such publications.

Mysore Special Finance Committee.

The following Order No. 4899-4958 - C.B. 171-21-1, dated 3rd February 1922 has been issued by the Mysore Government:—The budget estimates of receipts and expenditure of the State for the current year show a small surplus of Rs. 64,000 in the revenue account, but according to the latest available information the year is expected to close with a heavy deficit owing to the receipts under some revenue heads falling short of expectations and to certain unavoidable items of revenue expenditure in excess of budget provision. The position is not likely to improve during the next and succeeding years and the need has arisen for adopting urgent measures for the improvement of the budget position and the avoidance of deficit.

The Government have recently effected material reductions under establishment charges in certain departments and the proposals for retrenchment of expenditure made by non-official members of the Finance Committee appointed under Government Order No. Fl. C. 1-50, dated the 8th October 1919, have also been duly examined and given effect to wherever found possible.

The measures already adopted are, however, not adequate to secure the end in view, and when the general budget position was considered by the Finance Committee at its last meeting, Rajasabhabhushana Dewan Bahadur K. P. Puttanna Chetty, C.I.E., suggested the appointment of a Commission consisting of one or two officials and five or six non-officials with a Member of Council as Chairman, with definite instructions to investigate the working of each department, sitting from day to day, and suggest measures for improvement of revenue and reduction of expenditure so as to restore financial equilibrium. Although the Committee did not arrive at any unanimous conclusion in regard to the constitution and scope of such a Commission, the general sense of the non-official members was in favour of instituting an independent and close enquiry into the financial position of the State by a competent body specially appointed for the purpose.

The Government recognize that the Finance Committee as at present constituted and with the limitations under which it has to work cannot be expected to undertake the detailed and continuous investigation of the finances which the present situation demands. At the same time they are of opinion that such

investigation should be undertaken in close association with responsible non-official leaders of public opinion. They are accordingly pleased to appoint a Special Committee for scrutinizing the financial position of the State, constituted as follows:—

Chairman.

Rajasabhabhushana Dewan Bahadur K. P. Puttanna Chetty, C.I.E., Retired Member of Council, Bangalore.

Official Members.

(i) Mr. C. S. Balasundaram Iyer, B.A., Inspector-General of Education in Mysore.

(ii) Mr. M. N. Krishna Rao, B.A., Financial Secretary to Government.

Non-official Members.

(i) Rao Bahadur M. C. Ranga Iyengar, B.A., Member of the Legislative Council, Mysore.

(ii) Rao Saheb H. Chennaiya, Member of the Legislative Council, Bangalore.

(iii) Mr. Mahomed Abbas Khan, Member of the Representative Assembly and the Legislative Council, Bangalore.

(iv) Mr. S. R. Balakrishna Rao, B.A., LL.B., Advocate, Shimoga.

Secretary.

Mr. B. Srinivasa Iyengar, B.A., B.L., Senior Assistant Commissioner.

The work of the Special Committee will be mainly as follows:—

(a) Reviewing the State's finances for the past five years with a view to ascertain the causes of the deficit in the revenue position;

(b) Formulating proposals for wiping out the deficit and restoring financial equilibrium;

(i) by retrenchment and economy of expenditure without impairing the efficiency of essential services, and

(ii) by improvement of revenue and resources, including enhanced additional taxation, if found unavoidable;

(c) Preparing a forecast of revenue and expenditure for the next three years so as to result in a balanced budget after providing for the necessary financial reserves, such as Famine Reserve and Sinking Funds for loans, as well as for renewals and replacements of the State Railways;

(d) Preparing a forecast of capital demands under all heads for the next three years with reference to the resources (including loans) that may be counted upon;

(e) Examining past policy in regard to Public Debt Investments and Ways and Means operations including the utilization of Reserve

and Depreciation Funds, and suggesting changes if considered necessary.

The Special Committee will be authorized to summon and examine Heads of Departments, Secretaries to Government and officers of the lower rank and will be entitled to be promptly furnished with all necessary information as to the working of every department of the administration and the finances of the State in general. The Committee may also in special cases summon and examine non-official witnesses who may be considered to be competent to give useful and constructive suggestions in regard to particular subjects.

C.P. Co-operative Committee

The following are some of the important recommendations made by the Committee appointed to enquire into the working of Co-operative Credit Societies in the Central Provinces and Berar:—

The Registrar must be a trained man with special aptitude.

The audit staff must be increased and must be under the direct control of the Registrar.

Banks and societies should contribute to the cost of audit and make suggestions by which this may be effected.

The Registrar should have discretionary power to control the staff of central banks in the event of the directors failing to exercise proper control.

The Registrar should be empowered to license managers of central banks.

The rules under the Act and the bye-laws of central banks should contain a provision to the effect that in the event of no suitable persons coming forward for election as chairman, secretary or treasurer, the Registrar must have the power to appoint paid or unpaid workers to carry on the business of the bank and to invest them with the necessary authority.

Interfinance between central banks should be prohibited.

Balance sheets must be clear statements of the positions of the banks and must be in double form showing the operations for crop finance and for other finance separately.

The amount of the renewed and the overdue loans must be clearly shown in the balance sheets.

The accounts and proceedings of the central banks must be in English.

Primary societies should not accept deposits repayable on fixed dates or on the demand of the depositors, but deposits repayable at

It will be competent to the Committee to make recommendations as to all matters affecting public expenditure and revenue.

The sittings of the Committee will be held at Bangalore and will not be open to the public.

The Committee is requested to commence its work forthwith, sit from day to day and submit its final report to Government as early as practicable. The Government specially desire that an *ad interim* report containing recommendations relative to the budget of the next official year may, if possible, be sent up by the beginning of April next.

the convenience of the societies should be encouraged.

Central banks should not accept current accounts.

Fluid resource must be maintained at a definite standard and may be deposited with a commercial bank or invested in redeemable Government rupee securities.

The primary societies must furnish the central banks with periodical reports on renewed and overdue loans and the central banks must send reports monthly to the Registrar.

Renewed and overdue loans must be transferred to separate ledgers both by the primary societies and by the central banks.

Rates of interest on both deposits and loans must be subject to the Registrar's sanction.

Investments by central banks of surplus funds should be either in the form of redeemable Government rupee securities or of fixed deposits with banks approved by the Registrar.

Strict rules should be laid down regarding the custody of cash and securities.

Reserve funds up to a certain percentage of total liabilities to lenders and depositors must be invested outside the co-operative movements, and should be in redeemable Government rupee securities or in fixed deposits with banks approved by the Registrar, and the securities should be in the hands of the Registrar.

To ensure the observance of the bye-laws, the rules and the provisions of the Co-operative Societies Act, penal clauses should be provided in the Co-operative Societies Act, similar to those in the English Friendly Societies Act, 1896.

Industrial Notes from the United States.

By Alfred T. Marks.

Opening the First Freight-carrying Airway.

Washington, D. C., U. S. A.,—We now have made a practical certainty of the feasibility of commercial transportation by airplane. From almost the inception of airplane travel experiments have proceeded having for their object the utilization of this means for the requirements of commerce, as an auxiliary or adjunct to the railways and water-ways. Many obstacles and difficulties have had to be overcome, until now the years of effort promise a most gratifying degree of success.

The establishment of America's first practical freight-carrying airway—which to-day links Washington, D.C., with Dayton, in the state of Ohio—is looked upon as the initial tangible effort to develop commercial aeronautics in a national way. The assistance and co-operation of government agencies have contributed largely from the first in winning the present success.

The plans which have been found practicable call for the location of landing fields and the erection of freight-receiving hangars in the towns and cities on the route mentioned. Ultimately, based upon the success, now proven, of the Washington-Dayton air line, the country is threaded with a network of well-defined routes for air-going planes, and these routes will touch practically all of the more important points of the entire country.

Distinctive markers have been placed at plainly visible points in or near each city or town in order to identify each place for the operator of the planes. The chief of the American Air Service, referring to the new enterprise, says: "In the first place, it is absolutely necessary to have every town along the route of any size marked according to an international system so that the pilot aviator in going from one part of the country to another will know at a glance, even without the aid of a map, his approximate locality above the earth's surface."

This first unit of the proposed systematic chain of airways which will ultimately cover the entire country is considered typical of conditions that will be encountered elsewhere. Great mountain ranges are to be passed over, and the climatic conditions, taking the whole country over, include weather of all kinds and conditions, and these must

be thoroughly understood.

The Washington-Dayton freight-carrying line is to serve as a basic guide for the contemplated expansion of nation-wide commercial aviation. Cities and towns, favourably situated, are completing arrangements for establishing landing fields. In cases where this does not appear to be feasible then an emergency field will be set apart for the reception of the aviator should he experience "engine trouble" or other aggravating circumstances, rendering it advisable to bring the plane to earth. In this way, as will be seen, the municipalities, civic organizations and individuals will be necessarily taxed with the actual creation of the navigation air freight route.

Cross-country flying and flying by night will also be greatly stimulated by the completion of the Washington-Dayton air line. Other than commercial landing fields, the plans contemplate radio-direction finding, wireless communication, aids to night navigation, housing and maintenance of equipment.

While plans have not progressed sufficiently as yet to enable freight carrying on a large scale, and especially where merchandise bulks large in the unit, yet the practicability of this means of transportation, especially where speed is a factor, is fully demonstrated, and it only remains to enlarge the facilities now available in order to take "the run of the freight" as it is offered, on the same plan as is followed by the rail carriers.

Steel direct from the Ore.

Present day practice in the steel industry of practically the whole world is to smelt iron ore in a large blast furnace, thus converting it into pig iron. The next step is to transform this pig iron into steel by remelting the pig iron or making it hot as it comes from the blast furnace and transforming it into steel by any one of the standard processes. This practice of employing the blast furnace means really the reduction of the iron ore to iron with which there is mixed three to four per cent of carbon. The conversion of this iron into steel means the removal of most of this carbon again, for steel is simply iron with but a small quantity of carbon in it. Present world-wide practice, then, is the reduction of iron ore to metallic iron, putting in a large amount of carbon and then taking it out again.

From this brief explanation it will be readily recognized that if some process could be devised which would eliminate the necessity of the carbon, the whole steel-making method would be revolutionized. This has been the dream of scientific men for many years. Translated into plain language it means a method of making steel direct from the ore instead of what most people regard as the indirect process now used.

The public and technical press of the United States has been quite alive recently with various articles on this subject in which new processes and patents have been aired extensively. The principle of all of them is the treatment of iron ore, usually in a finely-divided condition, with coal or coke, also finely divided, in a special furnace heated with some reducing gas or other fuel so that the iron ore is reduced or separated from its oxygen and the iron converted into a metallic form known as "iron sponge". This is relatively pure iron except for the original impurities in the ore and it contains practically no carbon. Its conversion into steel direct would be a comparatively simple matter except for the fact that the iron in the form of iron sponge is easily reoxidized by the air when hot and, as it is always hot in such a process, this circumstance has interfered with its conversion into steel. Now, according to best authorities, patented processes have overcome this important draw-back.

It is not possible here to enumerate in detail the various processes that have been proposed. The most important, however, is the Lang process, worked out by an American. All aim at the same object and differ in apparatus for reducing the ore and handling the iron sponge. Some claim to have been successful in preventing the oxidation of the sponge and in producing steel economically.

Leading steel makers of the United States are agreed that the industry is on the eve of such discoveries in the simplification of its processes and the achievement of results as will practically revolutionize the steel-making industry of the world. In the words of C. M. Schwab, the ironmaster, "the unexpected and unexplained of yesterday is but the common place of to-day and to-morrow."

Automobile Owners' Travelling Service Station.

In keeping with the remarkable advance along other automotive lines in the United States, we now have the machine owners' travelling service station and "trouble adjuster," as it has been termed. One of New

York City's largest garages has equipped a number of light cars with special oil tanks and cabinets that carry all kinds of tools, grease, and small parts.

While these cars are intended in part to render aid to the motorist in difficulties, they have found their widest usefulness in general service for owners. The cars are driven to the customer's home or place of business and an hour is spent in making adjustments, oiling, greasing and repairing the car, testing and filling batteries, etc., keeps everything in fine condition and reduces road troubles to a minimum. This service is given to the regular customers' cars two or three times each month, or oftner if necessary. Each of the travelling operators, who are automobile experts, serves eight cars daily.

This travelling garage is an interesting contrivance. It is equipped with two fifteen-gallon tanks, one for kerosene and the other for carrying cylinder oil. On the back of the car, easily accessible, is a cabinet which carries hard-cut grease for filling universals and grease cups; a bucket of fluid grease, and a pump for delivering it; a drain bucket for draining and flushing crank cases; a battery-testing and battery-filling outfit, and a compartment for waste. On the inside of the cabinet doors are brackets for oil cans, grease cups, etc. The top of the cabinet is divided off into sections for the purpose of carrying all kinds of tools and wrenches. These sections are covered with a top that is also a creeper, which the operator uses when working under cars. In a case at one side of the car is a small stock of the smaller parts which are interchangeable in standard cars for the purpose of quickly making repairs where these are found to be necessary in overhauling the machines. The service is coming to be regarded as good "service insurance" for automobiles, and an expense-saver in many ways.

Recorder for Locomotive Operation.

An indicating and recording machine, called a "loco-recorder", designed to indicate to the engineer the speed at which the locomotive is travelling and to give a permanent record besides, of speed and direction of motion, whether forward or backward, and to record the time consumed in stops at stations and elsewhere, has just been devised here, and is being put in use by all of the larger railways. This instrument is intended for use in road service, and makes it entirely possible to eliminate much of the danger

incident to excessive speeds on curves or wherever speed restrictions are necessary. A dial pointer indicates the speed to the engineer, and the entire story of operation is clearly recorded on a tape that is easily read. The duration of stops and slow-downs is clearly shown by placing this record against a keyboard having all of the stations, towers, sidings, or other points on a division at which speed restrictions are necessary shown in the same proportions as the graduations on the tape.

The railways claim that such an instrument is especially valuable at the present time because of the extremely large and heavy locomotives and cars now in use. It is said to prevent the wear and tear which is unnecessary on rolling-stock and tracks caused by locomotives that are intended only for slow and heavy service are run at express train speeds.

A portion of this interesting instrument is built on the same lines as a speedometer, centrifugal force actuating the dial pointer which indicates the exact speed at which the locomotive is moving, while two pencils, operating independently, record the time and speed, on the tape. The tape is driven by a connection with one of the locomotive driving wheels, moving with it at the rate of a half-inch to one mile of locomotive travel. This tape is calibrated horizontally in miles per hour and vertically in miles of track, with heavy lines every five miles.

The movement of the speed pencil across the tape is in direct proportion to the speed of the locomotive and it returns to zero at every stop. Each change of speed is instantly indicated on the dial and as the dial and the recording mechanism are interlocked the acceleration and deceleration are recorded on the tape and are easily read at the end of the run.

A clock mechanism operates the time pencil, which moves across the tape in 10-inch strokes. This pencil makes an angular line when the locomotive is in motion, the angle depending upon the rate of speed. When the locomotive stops the pencil makes a straight vertical line on the tape, the length of the line showing the duration of the stop in the ratio of three-sixteenths of an inch to the one minute of time.

Besides being a safeguard in train operation, the advantage of using such an instrument lies in the fact that a complete record of the operation of several locomotives may be obtained for comparison, providing an accurate basis on which to make any changes

that may tend to improve the service.

An Interesting Photographic Innovation.

Photographers have long desired to find a method which would enable them to develop negatives without the exclusive use of the dark room, since because of the dim light therein it is often difficult to judge whether the plates have reached exactly the right degree of development, and they are only too familiar with the fact that neither an underdeveloped nor an overdeveloped negative yields the best results in the finished picture.

An American inventor and scientist, after long experiments, announces that he has the honour of devising such a process.

The new process, which is attracting much attention in the photographic profession, is said to be quite simple, requiring for its operation merely a suitable amount of the familiar red dyestuff known as "phenosafrainin". A solution of this substance is made in ordinary water in the proportion of 1:2,000, and 10 cubic centimeters of the solution are then added to every 100 cubic centimeters of the ordinary developing solution. Since the developing solutions have no effect upon the dyestuff a larger supply than is immediately needed of the mixture can be prepared and kept ready for the sake of convenience.

Developing solutions thus prepared have a very clear red colour, so that every detail of the picture can be observed with the greatest accuracy and convenience. The inventor makes the following remarks respecting the application of his process, which is as available for the amateur picture maker as for the professional:

"The operator must take care to leave the plates for one minute in the red coloured developing solution before exposing them to yellow light, so that the dyestuff will have time thoroughly to penetrate the sensitive film and make the latter non-sensitive to yellow light. I, myself, make use of a five-candle lamp enclosed by a very bright yellow shade. The development is complete within two minutes directly under the light of this lamp, no further precaution than that stated being necessary. The course of the development is perfectly normal. Even from the most highly sensitive plates—provided, of course, that the exposure has been properly made—one obtains crystal clear pictures, even in cases where control plates, which have been developed without the addition of the phenosafrainin are entirely clouded."

Canadian Trade and Finance.

Montreal, 1st February, 1922.—In looking back over the period since the Armistice, it occasionally seems strange that three years of peace should not have effected a greater improvement in the business of the world. The lesson of those years is that reconstruction is a lengthy process, when a large part of the world has to be reconstructed; twelve months may be a long period in the life of an individual business, but it is a short one in the course of international affairs. While a proper appreciation of this fact takes away the hope of any sharp general improvement during 1922, it should not blind us to the undoubted progress which is being made.

POSITION IN EUROPE.

Europe continues to be the storm centre of international trade. If there is one thing more than another which is responsible for the present depression in the business of all countries, it is under-production and inflation in Europe, for the European peoples constitute so important a section of the consuming population of the world, that their inability to buy on the accustomed scale disorganizes industry everywhere.

The under-production referred to is partly the result of the actual physical devastation of war, of the destruction of farming implements, factories and machinery. But a further cause has been the difficulty of picking up the threads of business where they were dropped in 1914, under conditions quite different from those now prevailing. New national divisions, and newly created tariffs, have impeded the easy resumption of old-time trade relations. In spite of these handicaps, actual production in Europe is slowly increasing; fields and mines and factories, all were turning out more, until, in some countries, the advance was checked by the decline in demand. But though there has been a marked improvement, the present output of most of the basic industries of these European countries is not yet on a par with that of 1913. Until it is, their standard of living and their purchasing power must be below normal. The values of goods produced, and the values of imports and exports, may compare most favourably with those of pre-war days. Volume, however, is the main consideration.

The progress which has been made in production is not in evidence when we come to consider inflation. Few European countries

can claim that their public receipts balance expenditures. As a result, the emission of paper money in many cases has gone steadily on, while, in others, the most that has been done is to hold the position of a year ago. The obstacles which fluctuating prices and exchanges place in the way of business need not be recited. The financial difficulties of European countries undoubtedly have impeded their efforts towards a resumption of normal production.

It is not certain that the price and currency deflation, which has taken place in Canada and in the United States during the last eighteen months, will ever come to pass all over Europe. In some countries, prices may be crystallized at a level far higher than that of 1914, by the creation of new monetary units; in other words, by making the present depreciation of currencies to some extent permanent. This action is inevitable in the case of Russia, Austria and Poland, for example. A return to par of their greatly depreciated currencies would involve a tremendous rise in the values of these monetary units, and consequently a fall in commodity prices, beside which the decline that has taken place in Canada and the United States would seem trifling. It is doubtful if many businesses could survive. Furthermore, the payment of the interest and the principal of long term loans, that were floated by governments and corporations during the regime of fantastically high prices, would become an impossible burden when taxation and profits were reduced to the old scale. So it has been realized that some action will be taken along the lines indicated above. But uncertainty as to what actually will transpire, renders the financial situation a doubtful one.

SITUATION IN ENGLAND.

The situation of England differs from that of the continental countries, and should be considered separately. Her financial position is relatively favourable. England never went to extremes in currency inflation. The issue of notes reached a maximum in 1920; and since that date, there has been a substantial reduction in the amount outstanding. England was not backward in imposing higher taxes, and consequently was able to meet, out of current revenue, a good proportion of the expenses of the war, the main expense being met from the proceeds of bonds sold to the public. In contrast to many other European

countries, the floating debt of England is not excessively large.

England depends on foreign trade for prosperity to a far greater extent than does the United States, and she is suffering at the present time from her inability to dispose of a normal quantity of goods in Europe and elsewhere. The volume of English imports and exports is well below that of 1914. Coal and textiles are two of the most important exports. Of the former, shipments abroad in November, 1921, amounted to only 3,594,000 tons, as against 5,913,000 tons in the same month of 1913. Consumption of cotton in English factories during the year ending July, 1921, was 1,827,000 bales, as compared with 3,825,000 bales in 1913. Improvement depends on an increase in the purchasing power of Europe, an increase which may be brought about in two different ways: (1) by the production of a larger volume of goods which these European countries could send abroad in exchange for imports; (2) by the reduction of English prices to a point at which poorer countries would be able and willing to buy.

Before the war, the low cost of living in England made it possible for labor to accept low wages, and for industries to produce high class goods at a price which rendered English manufactured products almost supreme in many markets. Since 1914, English labor has succeeded in obtaining higher real wages, and now is fighting reductions. Unless the higher wages are fully compensated for by increased efficiency, reductions are inevitable. In one way or another, England must attain a minimum unit cost of production, for only in that way can she sell the necessary volume of goods. No producer can, with profit, hold his goods for prices which his customers cannot afford to pay; wheat, cotton, sugar, and many other commodities, have had to be disposed of at greatly reduced rates, from which England, for one, has benefited conspicuously. The same movement must take place in the goods which England manufactures. The possibility of obtaining imports at moderate prices will be of material assistance to the European countries that are struggling to rehabilitate their industries.

Mainly because of the low prices prevailing for wheat and other commodities, which we referred to above, England has been able to reduce her unfavourable balance of trade in merchandise to sixteen million pounds sterling in December, 1921, as compared with

thirty-three million pounds in December, 1920. The excess of imports, during 1921, was 101 million pounds less than during the same period of 1920.

Other countries, as well, have contrived to reduce the margin between imports and exports, notably France, whose excess of imports, for the first ten months of 1921, was only 400 million francs, as compared with 19,000 million francs during the same period of the preceding year.

A change in the method of assessing values makes it difficult to say whether or not Italy has effected an improvement. Taking the figures as they stand, she has not. Germany, after having for a short period managed to balance imports with exports, is now moving in the opposite direction. The state of her finances, too, is going from bad to worse. It is to be hoped that the difficulties in regard to reparation payments will be solved, and that German finances will be placed on a sounder basis before any severe crisis occurs, since a disorganization of German industry, even though it were only a temporary one, would be to no one's benefit. There are enough countries out of the market at the present time, without adding another to the list.

The prospects for the success of the Economic Conference, which will be held in Europe this winter, are all the greater because Russia will join in the deliberations. Until now, Russia has been a barrier across the road to recovery. Her renewed participation in the economic life of Europe would be a most favourable feature.

UNITED STATES.

The trade relations of Europe and the United States are highly important, in view of the latter's position as chief creditor, and as the important source of supply for foodstuffs and raw materials. A survey of this branch of the subject brings to light some of the most encouraging developments of the past year. The sharp decline in prices in the United States, especially in the prices of agricultural products, has resulted in Europe obtaining its requirements of foodstuffs, and of cotton and other raw materials, at bargain prices, and the enormous favourable balances, which for years had been accumulating in the trade of the United States with European countries, are slowly but surely disappearing. The excess of exports to Europe over imports from Europe, which amounted to 2,642 millions of dollars in the ten months ending October, 1920, was reduced to 1,437 millions of dollars in the ten months ending October

last. These are the figures, the statistics of trade with all countries for the full year 1921 being shown as well :

Foreign Trade of the United States
in Millions of Dollars

1921	Exports	Imports	Excess of Exports	Excess of Exports to Europe
January	654	209	445	266
February	489	215	274	187
March	386	252	134	122
April	340	255	85	105
May	329	205	124	116
June	336	185	151	123
July	325	178	147	123
August	367	195	172	151
September	325	179	146	115
October	343	188	155	129
November.....	295	211	84	..
December	295	236	59	..
Total	4,484	2,508	1,976	1,437
Same period, 1920	8,228	5,278	2,950	2,642
Same period, 1919	7,920	3,904	4,016	3,720

The fact that the excess of exports decreased steadily through the autumn months, reaching a low point in December, is significant in view of the fact that the final quarter of the year is the time of heavy grain and cotton exports, and, in 1920, resulted in a larger favourable balance than any other quarter. Foreign trade is getting on a sounder basis. Instead of the business of the year involving a large increase in the unfunded debts of the rest of the world to the United States, the \$667,000,000 worth of gold shipped to the United States during 1921, plus immigrants' remittances to their homes in Europe, and interest payments on United States' securities held abroad, must have gone a long way towards off-setting the favourable balance of trade in merchandise, leaving a good part of the remainder to be taken care of by flotations of foreign securities in the United States, flotations which were in the neighbourhood of \$550,000,000 during the year just past.

This improvement in trade has had its effect on the exchanges. Greatly to the benefit of all concerned, the United States dollar is gradually retiring from the high points it touched about November, 1920, except in its relations with the greatly depreciated currencies. The movement in our case is as clear as day—a $4\frac{1}{2}$ per cent premium on U. S. funds early in January, as compared with one of 15 to 19 per cent last year. Sterling, too, has moved upwards in the most

encouraging way, touching \$4.24 in New York on the 12th of December, an increase in value during the year of 70 cents in the pound. Some comparisons of exchange rates in New York, in the months of December, 1920, and December, 1921, are given below :

Exchange Rates in New York
Percentage of Par

Country	Dec. 31, 1920	Dec. 31, 1921	Change
England	72.8	86.6	+13.8
France.....	30.7	42.2	+11.5
Italy	17.9	22.7	+ 4.8
Switzerland	80.1	101.3	+21.2
Sweden	74.8	94.0	+19.2
Norway	57.6	60.1	+ 2.5
Spain	69.4	77.7	+ 8.3
Germany.....	5.7	2.2	— 3.3
Austria	1.1	.2	— .9
Argentina	77.7	78.8	+ 1.1
* Brazil	55.8	50.4	— 5.4
Canada	85.7	95.1	+ 9.4

*Based on recent average of $25\frac{1}{2}$ cents to the milreis.

This improvement in exchange is one of the first signs of better foreign business. Every rise in European exchange in the United States increases the purchasing power of the countries concerned. Combined with lower prices, it means much to them in their efforts to exercise economy, restart their industries, and at the same time secure much needed supplies of food-stuffs and raw materials from abroad.

CANADA.

In the case of Canada, it is worth while to comment on the favourable developments which, one by one, are taking place in our trade. The rise of sterling in Montreal, and the rise of Canadian funds in New York, have been of great importance to us. The former movement increases the purchasing power of England and of most of the countries of the British Empire—our main markets—while the lower discount on Canadian funds in New York enables us to buy more cheaply in the United States—our main source of supply. Exports of grain have continued at a high level. Exports of lumber have improved. Our foreign trade for the calendar year resulted in a three million dollar surplus of exports of Canadian products, over imports.

Canadian postal rates on newspapers and periodicals have been increased as from January 1, 1922, to $1\frac{1}{2}$ cents per lb. This is the second increase of the newspaper postal rate during the past 12 months; and it threatens to injure commercial interests, without materially increasing revenue.



Views and Comments.

BY "ECONOMICUS".



The history of the State policy of excise on drink, *viz.*, "maximum revenue and minimum consumption," bears out the economic truth of its futility. Alcoholic liquors are articles of *inelastic* demand to those who are accustomed to drink and therefore the rise in their price will not send down the demand. Alcoholic drink is certainly an evil, but it can be checked only by moral persuasion backed by religious sanction and State legislation as well as by the provision of harmless beverages and good water facilities for the poor.

* * *

There is a striking unanimity, in spite of several differences, in the evidence so far submitted to the Indian Fiscal Commission. There is a general agreement that "neither a simple policy of unadulterated free trade nor out and out protection is possible for India." In making their positions clear different witnesses have naturally emphasized their own points of view which may be grouped under four heads:—(1) the merchant; (2) the producer; (3) the consumer; and (4) the State. (1) The merchants, especially the export and import merchants, desire to have the maximum trade, and are naturally afraid that protection is likely to cut off their business. (2) But the peculiarity in India is that many of these merchant houses, agency firms as they are called, are producers as well and hence they could not declare for a policy of complete free trade which is likely to adversely affect their production, for the producer naturally likes to have a home market free from foreign competition. (3) The consumer likes to have his goods as cheap as possible and is afraid that protection will increase his cost of living, but being inarticulate for the most part except for the special plea put forward in his favour by the interested merchant, his case is likely to go by default. (4) The State is expected to safeguard and stimulate the indigenous industries but also likes to have as much revenue as possible from customs duties which can be had only when the export and import trades are free.

In its written statement before the Commission, the Madras Chamber of Commerce states that "the hand-loom cotton industry must give way to the power industry," and though its attitude towards the former is "benevolent," it would not like to "protect" it against its powerful rival. The fact is that the handloom is economically more suitable to Indian conditions since this decentralization of a most important industry is likely to lead to better distribution of work and resources in a vast agricultural country like India. Again, the fact that the hand-loom has survived so far and shows signs of vitality gives the lie direct to the inevitableness of its disappearance before the power-loom.

* * *

During the sittings of the Commission in Madras all these points of view were duly emphasized by witnesses, but certain of their *obiter dicta* call for a word of comment. Every witness, European and Indian, except Dr. Gilbert Slater, held that indirect taxation is more suitable to India than direct. The reason, to quote the words of one witness, is that "in a country like India where the vast majority of people are poor and ignorant, direct taxation is likely to make them impatient with changes in the system of government that would ultimately increase their prosperity." "Economicus" is not expected to express an opinion on politics, but he must say that this policy of stealth is likely to be abused or lead to extravagant expenditure and keep the "ignorant" people always ignorant of the part they play in maintaining *their* government. The conscious payment of a tax, however distasteful, engenders responsibility and the education that this gives is far more important than any amount of good that the State can hope to do by earning money without their knowledge. This does not mean that indirect taxation is not necessary, but the criterion of its imposition ought to be economy of collection of revenue from those who are intended to bear the incidence.

* * *

An engineer has arrived at Nassau to advise the Government of the Bahamas in connexion with harbour improvements at that port.

From a strictly economic point of view there is much to be said in favour of Dr. Gilbert Slater's plea urged before the Commission for the abolition of Permanent Settlement and making "the land revenue fairly uniform in the proportion it bears to the economic rent over the whole of India." His another proposal is equally commendable, *viz.*, "the extension of income-tax to incomes derived from land, particularly in the case of permanently settled estates." This assumes of course that the State will utilize the increased resources to benefit agriculture by undertaking productive works which are beyond the capacity of individuals.

* * *

The Hon'ble Minister also said : "A protective tariff also increases the revenue and under the present economical condition of India, this is of the utmost importance." This is self-contradictory, because "protective" tariffs must logically aim in "protecting" industries, *i.e.*, exports and imports must cease to compete with the home producer and thus their volume or value and customs revenue reduced to zero. The argument used to defend his view is such an amusing instance of confusion of thought that one may quote it in full. "When Indians say that they want preferential tariffs for purposes of revenue and for safeguarding their industries," writes our Minister, "they are met by free-traders by the familiar argument that protection and revenue cannot by the same measure both be secured successfully. It is said that in so far as protection is successful foreign articles are excluded and no revenue is obtained, whereas if the articles are imported (paying duty) to that extent protection is a failure. But if any revenue is raised the duty is not truly protective, since it has obviously failed to prevent goods paying revenue from entering into the country. This is obviously an argument in a circle and can be answered by another argument in a circle. If protection fails foreign articles are not excluded and revenue is obtained. If, on the other hand, revenue is not obtained, it means that foreign articles are excluded and protection has succeeded. There is as much truth in this argument as in the other one urged by the free-traders." There is no "vicious circle" in the above, but only a misunderstanding of the exact meaning and scope of a protective tariff.

* * *

The third Dutch Congress for Inland Navigation will be held at Rotterdam on September 28 and 29 next.

In his written evidence before the Commission, the Hon'ble. Mr. K. V. Reddy, Development Minister, Madras, laid disproportionate stress on the importance of machinery in the agricultural industry. He recognized that its introduction in rural areas in India is "retarded largely by the cheap and excessive labour available in the country." Now, machinery is employed in Western countries to *economize* labour in rural areas because labour is very dear due to the competition of large organized factory industries in cities and it has very little effect in increasing the produce from the soil. Moreover, economy of labour is only apparent since the manufacture of such machinery itself absorbs much labour in city-industries. Again, its extensive use in agriculture leads to capitalist farming on a large scale. Conditions of Indian agriculture and Indian social customs being what they are, the prospects for the adoption of large machinery are very poor, but, even if possible, it is undesirable economically to build up capitalist farming on a large scale in our midst.

* * *

Complete dislocation of provincial and imperial finances is the first fruits of the Non-Co-operation movement. Fall in the excise revenue and increasing expenditure on military, police and jails are directly traceable to that movement. Some new taxes are sought to be imposed on the people on the *economic* merits of which it is perhaps useless to argue at this stage since the Government is admittedly embarrassed and likes to swim on the current of least resistance. Indeed the Hon'ble Mr. K. Srinivasa Iyengar, Law Member, Madras Council, is reported to have said while introducing the "Bill to amend Court Fees Act, 1870," that "in matters of this kind there cannot be any question of principle." There is much to be said in favour of the plea of some hon'ble members that proposals for new taxation must not be rushed through piecemeal by the Executive before presenting the budget. The Hon'ble Mr. Todhunter's plea that this practice is necessitated because, unlike England (a nation of shopkeepers), the Government is to face a nation of lawyers in India, is not only unconvincing but suggests that members of Council are not likely to co-operate with government to get the necessary revenue. The fact is the Executive is nervous that its ideas on retrenchment are not likely to appeal to the representatives of the people,

Economic Notes.

INDUSTRIAL, AGRICULTURAL, EDUCATIONAL AND GENERAL.

According to the Report on the Administration of Mysore for the year 1920-21, the sandal oil factories distilled 1,620 tons of sandalwood during the year. The demand for oil was fair up to November, 1920, and, with the commencement of a general trade slump throughout the world, sales dropped very considerably with the result that the total business done for the year came up to only a third of the quantity sold during the previous year, but, owing to the continuous downward course of exchange throughout the year, the average rupee price realized per pound of oil was quite satisfactory even at the high price realized for wood in the Madras and Coorg auction sales in November-December, 1920. As the stocks began to accumulate, arrangements have been made to reduce the output by temporarily shutting down the works in Mysore from July, 1921, till the surplus stocks are sold out.

The late W. T. Stead was so widely known and had so many friends throughout the world that readers all over the world will doubtless be interested in the report of the Stead Memorial Fund for 1921-22, recently published. The Fund has lost by the death of Lord Ranksborough, an energetic and able Chairman; and it has not succeeded in obtaining exemption from assessment to Income-tax. But it has secured Lord Strachie as its new Chairman, and it has hopes of moving the Inland Revenue authorities to grant it the relief to which it feels itself entitled. Meanwhile, it is carrying on excellent work, of a kind which would surely have appealed to W. T. Stead himself. Its hostels for women in London, Bath and Leeds, and its work for girls in Hoxton are all admirable, and the hostels are run on self-supporting lines in a way that proves their worth. The Council and the officials are to be congratulated on the success of the undertaking, and if any of our readers can spare a subscription or donation they may feel assured that it will be turned to good account in extending the work. The Hon. Secretary is Mr. F. H. Skrine; the offices are at 131, St. George's Road, S. W. 1; and the Hon. Treasurer is Mrs. Hylton Dale, 28, Elm Park Gardens, London. S.W.

The Zionist Organization Central Office announces that the High Commissioner of Palestine has approved the registration of a mortgage bank, under the name of General Mortgage Bank of Palestine, Ltd., with a nominal capital of £200,000. One-fourth of the capital has been issued in shares which have been taken by the Zionist bank, the Jewish Colonial Trust. Before the registration of the new bank long term credits to the extent of £34,000 had already been granted in the form of mortgages on small buildings in Jaffa by the Palestine Foundation Fund. This sum will be refunded by the Mortgage bank by debentures to the Palestine Foundation Fund, which will shortly increase its holding of debentures to £50,000.

According to *Narodni Listy*, the Czecho-Slovak sugar output for the period 1921-22 is estimated at $6\frac{1}{2}$ million metric quintals, while the stocks at November 1 are about half million quintals. The market will, therefore, have at its disposal seven million quintals of raw sugar, or $5\frac{3}{4}$ million quintals of white sugar. If the recently concluded contract for the delivery of 400,000 quintals to France is taken into account, about $1\frac{1}{4}$ million quintals, or more than one half of the Czecho-Slovak sugar surplus has been disposed of in addition to 800,000 quintals sold to local buyers. Nearly half of this year's output has thus already been sold. Large quantities have been purchased by the English buyers for delivery from the Czecho-Slovak warehouses in Hamburg. Of the exports in 1920-21 (4,143,760 quintals), the largest quantities were purchased by the following:—France 955,280 quintals, Hamburg, 844,880 quintals; Austria, 632,730 quintals, Switzerland, 484,290 quintals, England, 340,800 quintals (as compared with 22,110 quintals in 1919-20), Germany, 235,050 quintals, Roumania 212,670 quintals, Yugoslavia, 170,280 quintals and Italy, 121,680 quintals. The tendency towards concentration of interests which for some time has been making itself felt, was recently manifested by the purchase of the raw sugar factory at Zidovice and the sugar refinery at Steti by the sugar refinery at Usti.

In *Archives of Internal Medicine* (Vol. 28, No. 3, of September 15th, pp. 252-267) Dr. Aller G. Ellis, of Bangkok, Siam, discusses Betelnut Chewing and its Effects, including Cancer of the Mouth. Whether the (so-called) betelnut, *Areca catechu*, is more used than the leaves of the *Chavica betel* or *Piper betel* is not quite clear. Why the areca nut is called betel nut has yet to be ascertained. "The only reason I have found for giving it the latter name is that the nut is chewed with the betel-leaf," suggests Dr. Ellis. The practice of betel chewing whilst almost completely preventing decay of the teeth, causes them to become very dark brown, even at times almost black in colour. It also tends to loosen and thus cause a loss of the teeth. This deserves close attention and study and will probably receive it. Summing up, Dr. Ellis claims that betelnut chewing does not frequently cause cancer of the mouth, but there are reasons for believing that, in an as yet undetermined percentage of cases, it does lead to this result.

The provision of roofing material for building in the tropics is often a matter of difficulty. Corrugated iron is largely employed but it is frequently very costly, and, moreover, tends to make the building unbearably hot. In several countries in Africa it has been suggested that roofing tiles should be made locally, and search has been made for suitable materials. Specimens of clay and sand, collected in Uganda, and of clay and diatomite from Kenya Colony, have recently been examined at the Imperial Institute in order to ascertain their possibilities in this direction, and the results of the investigation are given in the current number of the *Bulletin of the Imperial Institute*. It is shown that tiles of good quality can be made with a suitable mixture of the clays and sand from Uganda, whilst good tiles can also be made from mixtures of the washed clays with "grog," i.e., clay which has been burnt and finely ground. The clays from Kenya Colony were also found to be suitable for making roofing tiles. The results obtained with the infusorial earth or diatomite (which contained a certain proportion of clay) are of special interest, as this material, which does not appear to have been employed previously for the purpose, furnished tiles which were much lighter than ordinary roofing tiles, which is a great advantage. There are extensive deposits of infusorial earth in Kenya, not at present worked.

The cultivation of sugar-cane has received some impetus during the last two or three years owing, doubtless, to the obvious advantage of supplying the country with home-made sugar, in face of the high prices charged for the imported article, states H. M. Consul at Asuncion in his Report on the Economic and Financial Conditions in Paraguay (H. M. Stationery Office, price 1s. 3d. net). The area at present under cane is estimated at 11,000 acres, and the production of sugar in 1920 is given as 3,800 tons, as compared with 2,505 tons in 1919, and 562 tons in 1918. The average consumption of sugar is stated to be about 3,000 tons a year. In 1920 Paraguay appeared for the first time as an exporter of this product, with a shipment of 1,411 tons. Seven factories are at present in operation, the largest of which, with a production of 2,000 tons in 1920, has eight or ten miles of metre-gauge railway running through its estates. Only the ordinary unrefined sugar is produced by these factories, and there appears to be room for enterprise in the establishment of a refinery. The production in 1920 of industrial and rectified spirit from sugarcane was 419,000 litres and of cana (rum) 641,600 litres.

The word "Bolshevist" or "Bolshevik", is used by all sorts of people who have only the vaguest idea of what it means, and no notion at all of its origin, so, it seems worthwhile to state how it arose. In 1898 the Russian Social Democratic Labour Party first came into existence, says a writer in the *Sunday at Home* magazine. In 1903 the party held its second meeting. The intention was to form a Democratic Republic with a constituent Assembly. At this Congress a great collision took place between the Extremists and the Moderates. Lenin of the Extremists; Martoff those of milder and more democratic views. It was put to the vote as to which party should be supreme and the majority voted for Lenin, and were henceforth known as the "Bolsheveki" from the Russian word Bolshe ("greater"). The minority voted for Martoff and were called "Mensheveki" from Menshe ("less"). From this time onwards there has been a violent antagonism between the Bolsheviks and Mensheviks, and so far they have not come together. The Mensheviks are law-abiding, and are generally guided by democratic principles; on the contrary the Bolsheviks have sought to secure communism by violence.

The Employment Service Council of Canada has given official recognition to the principle of buying "Made-in-Canada" goods as a remedy for unemployment. The Council, which is representative of employers, workers, farmers, returned soldiers, Provincial Governments, the Department of Soldiers' Civil Re-establishment, and the Dominion Department of Labour, is charged with the duty of recommending to the Minister of Labour ways of preventing unemployment. At its last meeting it passed a resolution recommending to the purchasing public the desirability, when prices are fair, of demanding goods produced in Canada. The recommendation contained in the resolution has received the approval of the Minister of Labour, and the Press of Canada has been invited by Mr. Bryce M. Stewart, Secretary of the Council, to extend its co-operation in bringing the matter to the attention of the public.

An Exhibition intended to demonstrate the various uses to which electric power can be put will be held in Christiania from 22nd April to 7th May, 1922. Foreign as well as Norwegian firms will be permitted to exhibit. The Exhibition will cover every branch of electrical industry, material and manufacture. It should be remembered that Norway is extremely up-to-date in the use of electrical appliances; nothing, therefore, but the very best is worth exhibiting. H. M. Consul at Christiania advises that firms who desire to exhibit should communicate direct with their agents in Norway, and points out that among the goods which are of most interest to the Norwegian market are labour-saving electrical appliances for the house. India needs light internal combustion engines for direct coupling to centrifugal pumps used to convey water from wells for irrigation purposes. It is suggested that an arrangement will be desirable to start the engine light, preventing the pumping load being placed on the engine until the requisite speed is attained. The average depth of wells is about 150 ft. and the average discharge 160 gallons per minute. United States exporters are alive to the requirements, and the United States Trade Commissioner in Bengal reports that India is one of the best markets for American machinery. He considers that rebuilt motor-car engines may be adapted for such purposes, or that manufacturers might design a type of engine suitable for pumping.

The Government of Jamaica is understood to be taking considerable interest in a project for the establishment of a Portland cement industry in the Colony. In the event of such a scheme materialising in Jamaica with Government approval the industry may possibly ultimately absorb most of the trade in the West Indies. The Department of Overseas Trade has received a report by a United Kingdom firm of consulting metallurgists on the possibility of establishing such an industry in Jamaica.

The application of wireless telephony to industrial purposes is steadily progressing in France. Last month a train running on the northern line at a distance of 30 miles from Paris was able to carry on a conversation with the Gare du Nord from a special van which had been attached to it containing wireless telephone apparatus. Three kilowatts were found to be necessary for transmission while the train was moving, but the operator, to his surprise, discovered that when the train was standing and the waves were transmitted through antennae fixed between two telegraph posts only a force of 30-40 watts was necessary. Quite recently wireless telephony was used by the steamship *Paris* to communicate with Paris when 500 miles away. Last summer wireless telephony was being used between fishing smacks off Havre, and between them and the shore a distance of 20 miles.

The Ocean Leather Company, Incorporated, has decided to extend its operations in the Bahamas, in connexion with the capture of sharks for the production of leather. The company began operations in the colony a year ago. Samples of leather produced have been pronounced perfect both in England and America. An unlimited supply of sharks is to be found in the waters of the Bahamas; upwards of 500 varieties have already been discovered, and the use of depth charges in the fishing operations has helped to convince officers of the company that a very profitable industry can be developed in the islands. It is proposed to establish at New Providence, the main island of the group, a station for the preparation of skins for shipment to the company's tannery at Newark, N. J. A plant will be installed for the production of liver oil and extraction of glue from certain portions of sharks. The fins will be prepared for the Chinese market while the refuse will be converted into a high-grade fertilizer.

Some time ago several samples of clay and lime were sent from Ceylon to the Imperial Institute, London, to ascertain if any of them were suitable for the manufacture of cement. It is now reported that some Jaffna clays are quite suitable for the purpose. The commercial aspect of the manufacture of cement at Jaffna is now being examined. The main difficulty is the high price of coal. The possibility of developing a small hydro-electric scheme to operate the plant is now being studied. Experiments are also being made to find out if palmyra or coconut shells, which are known to give a good heat, could be used in place of coal. The clays and limes of the island have not been studied systematically with a view to employing them for industrial purposes. It is generally believed that clays and limes suitable for cement manufacture are to be found in the brick and tile manufacturing territory near Colombo. If this should prove correct, the proposed hydro-electric scheme will assist the establishment of a local cement industry.

According to the Report on the Administration of Cochin (South India) for the year ending 16th August, 1921, investigations about metal work and weaving industries were completed early in the year and two Industrial Co-operative Societies, one for metal work and the other for weaving, were started during the year. The control of the work of the Parayas in the Chalakudy Colony was also taken up by the Department. Proposals for the starting of a stone ware factory were placed before the Advisory Board and the services of Mr. J. F. Kuehnel, a Bohemian expert, were secured for constructing the factory and demonstrating the working of the same. Due to considerable delay caused by various circumstances the construction of the factory could be begun only towards the close of the year. The construction is progressing satisfactorily, the machines from England and Germany are expected to arrive shortly and real work will begin soon. The question of starting a paper pulp factory was also taken up during the year. The Industrial Advisory Board met four times in the year and several important subjects were discussed, the chief being (1) the formation of Industrial Co-operative societies, (2) selection of candidates for award of Industrial scholarships, (3) the details connected with the engagement of the Government Pottery Expert, (4) details about the paper pulp factory, and (5) the budget of the Department for 1907.

Rubber shoe manufacture in Japan has developed rapidly, due to the widespread local demand for these articles. One now notices many of the inland folk wearing red rubber boots made after the style of old-fashioned elastic side boots, in order that they may be easily slipped on and off. The rubber shoe factories in the prefecture of Hiogo, the centre of production in Japan, are:— Factories working, 89; Factories in process of construction, 30; Factories which have applied for permission to construct, 19; Total, 138.

During the month of November, 1921, there were 43 companies registered with an aggregate authorized capital of Rs. 2,46 lakhs, as against 54 companies with an aggregate capital of Rs. 11,18 lakhs in the corresponding month of the preceding year, and 38 companies and Rs. 6,20 lakhs in the preceding month. Bengal accounted for 14 companies with an authorized capital of Rs. 62 lakhs, and Bombay 8 companies with Rs. 94 lakhs. The largest flotation in November was the Solar Assurance Company, Bombay, with an authorised capital of Rs. 50 lakhs. Twenty companies limited by shares, with authorized capital of Rs. 1,26 lakhs, having ceased work, went into liquidation or were finally dissolved during the month of November, 1921.

A development in the business boycott of Ulster by the Sinn Fein organization has taken place. When they were at first ordered not to do business with Ulster, traders in other parts of Ireland continued to procure Belfast productions through warehousemen in Great Britain. This circuitous way of obtaining supplies involved increased cost, which the purchasers were prepared to pay. Eventually the embargo was extended in order to prevent such imports, and now a further extension is recorded. Wholesale textile houses in England will not be allowed to receive any further consignments of goods from Ulster, either direct from the manufacturers or through intermediaries. In addition, they have been informed that if they desire to do business with central and southern Ireland they must appoint selling agents in Dublin. Manufacturers in Belfast, Londonderry, and other Ulster centres are seriously concerned at the new development, particularly as certain wholesalers on this side have sent instructions to stop further consignments.

Economic Gleanings

WORLD'S PROGRESS IN FEW WORDS.

The Dunswart Iron and Steel Works, Limited, Johannesburg, has increased its capital from £25,000 to £125,000.

* * *

The Government of Jamaica has imported another consignment of cattle from India to improve the breed of cattle in the colony.

* * *

The new water scheme for Durban, Natal, including a dam at Shongweni which will take more than four years to build, is estimated to cost £596,342.

* * *

The Rhodesia Portland Cement Company has decided to suspend operations temporarily owing to lack of demand and consequent accumulation of stock at its works.

* * *

The Denver Engineering Works, Colorado, have secured the contract for the transportation and erection of 31 bridge spans in the Union of South Africa, the price being £31,426.

* * *

A factory has been established at Dominica for the manufacture of citric acid crystals from lime juice ; and the process under local conditions has proved completely successful.

* * *

A proposal to establish a woollen industry in Kimberley elicited a promise to the Chamber of Commerce of £200,000 capital, provided another £200,000 is raised by the town.

* * *

The Governor of British Guiana has been visiting the sugar-producing districts of the colony in connexion with a proposal that the State shall provide financial assistance to estate owners.

* * *

Mr. J. P. Stevenson, American Trade Commissioner in South Africa, considers that it will be sound business policy to appoint a Union Trade Commissioner for the United States, with headquarters in New York.

* * *

The final Indian crop forecast of sesamum is 4,450,000 acres with an output of 450,000 tons, as compared with 3,506,000 acres and 323,000 tons last year. In both cases the figures are exclusive of Hyderabad, Deccan.

During the winter months many Canadians will visit the West Indies. A delegation of the Canadian Manufacturers' Association will be among the number.

* * *

The Trinidad Legislature has adopted a resolution approving of an amendment to the first schedule of the Customs Duties Ordinance to levy increased duties on beer, spirits, wines, and tobacco.

* * *

The Government of Trinidad has introduced legislation to afford financial assistance to planters during the present year. It is proposed to give temporary relief to mortgagors and to make advances to owners of estates. A loan of £200,000 for the purpose is proposed.

* * *

In order to enable the colony to provide funds to assist immigration the Government of Trinidad has agreed to submit a Bill to the Legislature to levy taxes on sugar, rum, molasses, cocoa, coconuts, and copra produced in the island and shipped during the year 1922. The taxes, which range from 1½d. per 100 lbs, on cocoa to 5s. per 100 gallons on rum, bitters, and molasses, will not be collected until 1923.

* * *

Representatives of Canadian capitalists are studying the possibilities of assisting in the development of several West Indian colonies. British Honduras has been visited by one party whose aim is to acquire lands for the production of bananas and citrus fruits. Investigation is also proceeding in Jamaica with a view to the introduction of Canadian capital in connexion with agricultural enterprises in the colony.

* * *

Indian demonstration farms are planting sugarcane in long continuous rows 4 ft. apart, a method of cultivation which promises to revolutionize this industry. Practical demonstrations show that intertillage can be carried on by bullock power and that economy of water is effected by directly irrigating the furrows in which cane grows instead of flooding the whole area, while additional space is obtained for free tillage and for necessary aeration.

United States-owned mills produce 51 per cent of Cuban sugar crops ; European-owned mills, 27 per cent ; Cuban-owned mills, 22 per cent.

* * *

The pink bollworm is reported to have invaded the cotton plantations of Porto Rico, and it is feared that the distribution of the pest is general.

* * *

Eggs rank third in importance among the chief Danish agricultural exports. Only butter and meat (including bacon) show a larger export value than eggs.

* * *

An Economic Institute for Russia and the Border countries has been established at Königsberg (East Prussia) by the board of management of the Königsberg Fair.

* * *

Swiss manufacturers who have been interesting themselves in the Brazilian market complain of losses due to the competition of German goods, particularly engineering products.

* * *

The Senior British Trade Commissioner in India has forwarded to the Department of Overseas Trade copies of the "Third Supplement to the List of Electrical Undertakings in India," revised to October, 1921, which contains valuable financial and technical details with regard to the various licensed electrical undertakings in India.

* * *

The tobacco-manufacturing industry is one of the 20 principal industries of Canada. The cultivation of tobacco in the Dominion, fostered by the high protective tariff on the manufactured product, is chiefly confined to the provinces of Ontario and Quebec. However, certain districts in Alberta and British Columbia are suitable for the growth of the tobacco plant, and it is expected that these areas may soon be depended upon for supplies of the commercial leaf.

* * *

Benoni (Transvaal) Municipality has recently acquired the triangle of land formed by the Benoni railway and a portion of Benoni township on the north, and the Dunswart-Kleinfontein section of the Boksburg-Springs railway on the south. This acquisition will provide several hundred much-needed industrial sites, besides creating a market for building materials. It is understood that the Brakpan municipal authorities are negotiating for control of a large area of land as an industrial centre.

The Trade Bureau recently established by the Danish Foreign Office has now been opened officially. It aims at obtaining the most useful information regarding overseas markets for Danish exports, and the best sources of supply of her import requirements.

* * *

Tractors are now being used in British Honduras for the purpose of getting out mahogany and cedar, according to a statement in a report from the American Consul at Belize. Five tractors have been received and are now being used in the mahogany forests. The country from which these tractors were shipped is not stated, but British Honduras has not bought any tractors from the United States since January, 1921, during which months two tractors were shipped from that country to the Colony.

* * *

Recent statistics show that the total number of motor vehicles registered in 1920 on the island of Montreal was 19,443. In the entire Province of Quebec there were registered in 1920, 47,730 automobiles and motor trucks, an increase of 18,547 over the previous year. These figures show the rate at which the number of motor vehicles is increasing in Quebec, and give an idea of the extent of the market for rubber tires and tubes. It is estimated that in all Canada there are approximately 405,000 motor vehicles.

* * *

The German Foreign Trade Control Bureau for the paper industry has decided to restrict export permits for a number of products of the paper and cardboard industry and to forbid any appreciable increase in the exports of the other products of these branches. The stipulations regarding invoicing in foreign currency for shipments to countries with a higher exchange rate have been extended to a further number of paper products. This extension does not, however, apply to exports to Egypt and the United States.

* * *

Mr. Hughes, in a speech at Bendigo, said that the Federal Government were profoundly disappointed by the result of the co-operative arrangement between the Commonwealth and the States for the promotion of immigration. The Federal Government had spent a quarter of a million on developing the scheme. The fact that only 10,000 people had come to Australia in the last nine months was a reflection on the common sense and enterprise of the country. Immigration was the one hope of Australia.

The Bavarian Government will establish a chair for cinematography at the Munich Technical University.

* * *

The German Lead Syndicate has increased prices for rolled and pressed material from 690 to 715 marks per 100 kilos.

* * *

The Anatolian Press reports that the Government, after investigation of the economic situation, has decided to abolish export duties.

* * *

During 1920 the consumption of petroleum oil in Germany amounted to 120,000 tons, most of the oil being imported by American firms.

* * *

Important Commercial houses in Constantinople have arranged for the cancellation of 1920 Manchester orders for 1921 delivery against penalties.

* * *

Copenhagen municipal authorities are arranging public building schemes at a cost of about six million kroner in order to remedy the shortage of houses.

* * *

In 1920 the total output of pit-coal in Czechoslovakia amounted to 111 million quintals (as compared with 104 millions in 1919), and of lignite to nearly 197 million quintals (as compared with 171 millions in 1919).

* * *

The Secretary of State for the Colonies has approved of the proposal to construct a railway into the interior of Jamaica. The Legislature has already passed a Bill authorizing the raising of a loan for the purpose. The Government propose to place the order for rails and other equipment for the line in the United Kingdom.

* * *

In the eastern group of West Indian colonies Canada has captured the trade which was for years in the hands of foreign firms. Canada is drawing largely on the West Indies for tropical products, and the returns of sugar, cacao, coffee, and other commodities shipped from the Caribbean to Dominion markets during 1921 show considerable increases.

* * *

A Reuter message from Berlin states that the German Reichstag has passed a law aiming at the prevention of speculation in bill transactions with foreign countries. It will come into force as from March 1, from which date transactions in foreign exchanges can only be carried out through the Reichsbank and other authorized banks.

In British Honduras the feeling of commercial men is that Canada is not yet ready to take their domestic woods, coconuts, and some other commodities, and consequently the bulk of these articles must go to the United States. The results of trial shipments of mahogany and coconuts to Canada were anything but encouraging from the shippers' viewpoint.

* * *

A Conservator of Forests is to be provided for British Honduras. In order to maintain an adequate staff in the new department the colony proposes to invite financial assistance from Imperial sources. It has been decided that the Belize Estate and Produce Company, which owns large tracts of timber lands in the colony, shall employ the Conservator of Forests for three months every year.

* * *

Sir Francis Watts, Commissioner of the Imperial Department of Agriculture for the West Indies, Dr. J. B. Farmer, Professor of Botany at the Imperial College of Science and Technology, London, and Mr. H. A. Ballon have arrived in Trinidad to make preliminary arrangements with regard to the establishment of the West Indian Tropical Agricultural College in that colony.

* * *

In connexion with the export premium granted to Swiss watch manufacturers, the Government Committee at Geneva has been engaged in fixing the rates of exchange for depreciated currencies which it judges proper for purposes of competition. For example, the French franc will be reckoned at 48 Swiss centimes, the German mark at five centimes, and the Austrian crown at 0.06 centimes.

* * *

The Government of Trinidad have agreed to make representations to the British Government in regard to the payment by the colony of much higher freight rates upon shipments to British markets than foreign countries are paying upon similar products. The effect is that the advantage secured for Colonial products under the British preferential tariff is practically nullified.

* * *

Owing to an attempt by the Colonial Government to remove certain services from the control of the municipal authorities of Port Louis, Mauritius, which the latter have strongly opposed, the carrying out of the extensive public works programme recently approved has been postponed pending a reconsideration of the matter by the Governor.

EDUCATION IS ACTION

MR. M. L. BURTON,

President, University of Michigan, writes to the "Detroit Free Press."

Education is action. Too many people think of education as a process in which a youngster sits still while some oldster tries to tell him something. It can't be done! You can't teach anything to a tree or rock. Learning is an active not a passive affair. A student is one who studies. You begin to get into the process of becoming educated when something inside of your own head goes to work.

A university is not a wholesale storehouse of knowledge. A professor is not a purveyor of chunks of knowledge. He is not supposed, by profession, to be an expert with a wheelbarrow and a shovel. A student is not a receptacle into which quantities of knowledge are to be dumped. Teachers are not birds dropping worms of knowledge into open mouths. Even stomachs have to digest. Education is an active, vital, fascinating affair.

A university is a group of scholars and students with active minds intent upon knowing the world and determined to find the truth. Of course it must have buildings and lands. Libraries and laboratories and hospitals are among the necessary tools. But we find a true seat of learning wherever human beings are actually alive mentally and spiritually.

The most challenging fact of life is that every person has an active mind. The most distressing fact is that few people ever find it out. The tragedy of life is that so few people ever wake up. Emerson was entirely right when he insisted that on active soul is "in almost all men obstructed and as yet unborn." We shall progress and prosper just in proportion as education succeeds in tearing away these obstructions and in setting free the minds of men and women. A student is being educated when he gets into action. That activity occasionally needs direction and guidance, but the essence of education is action.

Here is Something to Digest
For All Who Talk of Education
But cannot see in what it consists.

Economic Reviews Reviewed

WITH EXCERPTS AND COMMENTS.

New Conception of Railways.

A great controversy over the question of railroad management has arisen in the United States between Mr. Henry Ford, America's largest industrialist, and the leading railroad operators, says a Special Correspondent of the "Times Trade Supplement."

About a year ago Mr. Ford acquired control of the Detroit, Toledo, and Ironton Railroad, a short line of some 450 miles. For years the road had been losing money, and Mr. Ford was able to buy the road very reasonably. During the brief time that he has been in control, Mr. Ford has put the road on a paying basis, increased the wages of his men, and reduced freight rates.

The controversy between Mr. Ford and the railroad operators grew out of a statement recently made by the former in which he criticized rather severely present methods of railroad operation. He said that the "parasite" stockholder is a burden upon the railroads, and should be got rid of as soon as possible. As further measures to improve the existing system of railroading, Mr. Ford would re-design the rolling stock, making it lighter, and discharge unnecessary employees, especially clerks and lawyers. He said there were enough lawyers employed by the railroads to operate the roads.

"The real purposes of a railroad," Mr. Ford says, "is to serve the public. There is no reason why it should be diverted from that service and set to doing an entirely different thing—putting money into the pockets of stockholders who make no contribution to the road's actual operation. Paying dividends to these people is a burden which should be lifted from the railroads. The greater the over-capitalization, the heavier the burden. It bears them down and prevents them from serving their purpose. In the end the public pays these dividends. They are a tax on the whole people."

"There is a possible and practicable system of financing railroads by which those contributing the money will be in positions to aid directly to the success of the undertaking. If the brakeman on a railroad owns a stock in it, he has an additional inducement to competent service. Better service is a valuable by-product which will come from his ownership of stock. If the railroad is a success, it is due to him and his fellow-workmen, and they are entitled to the profit."

"Railroads should not have to go to banks for money. They can be otherwise financed; in fact, finance is the wrong term to use. We talk too much about finance. The first thing to do is to make a railroad work. Make it possible for people to use it as much as they desire. Then there will be no trouble about finances. The trouble is that we start with finance and expect finance to make the road go. Finance cannot do that. Finance is a failure."

"Of course, if such a course were attempted, we could expect a great outcry for the protection of invested capital. It would be said that people had

bought these stocks for the financial protection of their families, their children. Protection from what? From the necessity of earning their living. Their children would be better off if they had to finance themselves."

"Proper financing would, of course, be easier on new roads. On the old ones, however, it should be possible to retire the parasite, the non-contributing stockholder, and get the ownership into the proper hands."

"After removing this dividend drain, the second step would be to remove the great physical burden of the railroads—needless weight of their rolling stock. Overweight of rolling stock is the prime mistake on the mechanical side of railroading. Engines and cars are four or five times as heavy as they should be. A freight train is several times the weight of the load it carries, and a passenger train is twenty times as heavy. This dead weight must be moved whether a train is loaded or empty. The cost of pulling empty trains is needlessly large. Contrast this with the efficiency of the bicycle, which weighs 20 lb. and will carry a man who weighs 200 lb."

"On the Detroit, Toledo, and Ironton we are using up the old types of engine and car, but they will be replaced by better types. We will patent our new designs where they are patentable, but we will do this only to prevent some one else from doing so. Some patents are taken out to prevent the free use of ideas. Our patents will guarantee the free use of ideas. We will never proceed against anybody for infringement of our patents. They will belong to the world."

PERPETUAL MOTION.

"The third step, and immediate step, which should be taken in the operation of any great railroad system," Mr. Ford said, "would be that of expediting the journey of the freight carrier. On the Detroit, Toledo, and Ironton we tolerate no idle men, idle cars, or idle engines. Loaded cars or trains on side tracks are proof of inefficient operation. They can be made to keep moving."

"If a car takes more time than it should to deliver its load at its destination, it is not, of course, earning as much as it should for the road. It is just as much waste as it would be for a man to take two days on a one-day job. It is more so, because that car is likely to hold another car back. But here is another point. It is lengthening the time of the turnover of the shipper—and that, too, is a waste of money and everything else."

"Our experience illustrates this excellently. The road we have acquired runs north and south, and crosses most of the trans-continental lines. By speeding up our freight on this preliminary part of its journey we have been able to shorten the time of its delivery by periods ranging from seven to fourteen days. This means that we carry on our books \$30,000,000 less undelivered product than we otherwise should."

"Most railroads have enough lawyers working for them to operate them if they were engaged in useful work. One of the first things is to dispense with the legal staff. A well-managed road need

less of that sort of service. We did just this on the Detroit, Toledo, and Ironton. The lawyers are mostly in the claims department, which is one of the most wasteful branches of railroad operation. Any small claim against a railroad is very likely to knock about the claims department for weeks or months, to require endless clerical attention, to clog the machine, to cost many times as much as it would to pay it. Proper organization would lead, at the time it is first presented, to establishing the facts about it and settling it on the basis of justice. It would keep all this detail off the books. Few claimants would refuse to settle on the basis of the facts.

"The bookkeeping of railroads is complicated far beyond all necessity. The amount of duplication and red tape is almost beyond belief. We have simplified this department, reduced its cost, and have transformed it into an actual help to the railroad instead of a vexation and a burden. How did we do it? By viewing the whole proposition as a service to the users of railroads, and making everything fit into that instead of having the fear of stockholders and dividends before our eyes. Our faith is that service will pay. Finance does not come first. Work comes first.

EXIT THE LOAFER.

"We do not claim to have done anything new in railroading—yet. We have only taken the old system of operation, and cut off its obvious absurdities. Even the old system of railroading, brought up to efficiency, would be an immense change for this country. We have simply cut out the loafing of men, the loafing of engines, and the loafing of cars. The result seems to have surprised many people. But there is no mystery or magic about it. Anyone can do it. If the introduction of plain, every day good management will create such a change, what may we not expect from really new ideas?

"I do not like to appear as criticizing any railroad manager, for I have never done so. With their stockholders on their backs and their banker bosses who do not know anything about railroading, what can they do? They must be liberated from the present system. And you cannot do that by giving them \$500,000,000 to perpetuate the present bad system either."

SOME CRITICISM.

While the railroad operators are criticizing Mr. Ford privately for his attack upon the present system they are reluctant to come out in the open.

The nearest approach to open criticism comes from Mr. Walker D. Hines, who was director-general of railroads in the United States, when the Government operated the road during the war. Mr. Hines was at one time chairman of the board of the Santa Fé Railroad.

Mr. Hines says that it is contrary to public interest for a large shipper like Mr. Henry Ford to own and operate a railroad by means of which he has a powerful leverage for obtaining special consideration from the common carriers of the country.

"But as long as this is permitted by law," says Mr. Hines, "we can at least congratulate ourselves that the D. T. and I. railroad is in the hands of a genius who is willing to turn his railroad into a laboratory for the making of experiments which his resourcefulness suggests. I shall be surprised if some of the experiments do not turn out to be valuable from the standpoint of railroad companies in general."

Empire Cotton Growing Corporation.

The Journal of the Textile Institute for November 1921 states:—

The King in Council has approved the grant of a Charter to the Empire Cotton Growing Corporation. The Corporation is the permanent body which is being set up to carry into effect the recommendations made by the Empire Cotton Growing Committee. This Committee was appointed by the Board of Trade in 1917 to enquire into the possibilities of cotton production within the British Empire, in the hope that by fostering the growth of cotton in the Dominions and Colonies the industry in this country might be made less dependent upon the United States for the greater portion of its supply of raw material.

The object of the Corporation will be to extend the cotton-growing areas of the Empire and thus both promote the development of the Dominions and Colonies and also assist in the stabilization of prices by drawing on a number of new areas far distant from each other, in addition to the American cotton belt, thus making the supply of raw material less dependent on climatic conditions in one part of the world. A bad season in one part of the Empire will, it is hoped, be counteracted by good crops in other British possessions, whilst Lancashire will also be enabled to view with less concern America's ever-increasing consumption of her own crop.

Under the Charter the Corporation will, amongst the other functions, have power to carry out the following work:—

(1) To assist in the enlargement and strengthening of the Agricultural Departments of the Dependencies and Colonies, and to provide facilities for training men for posts under these Departments.

(2) To establish a Bureau for the dissemination of information on cotton-growing, and to issue a journal containing useful information on the subject.

(3) To undertake the marketing of crops where this will prove of assistance to the local Governments; this work will doubtless be done in conjunction with the British Cotton Growing Association.

As has already been announced, the Corporation will be financed by means of the grant of approximately £1,000,000 which has been made by the Government, and by levy imposed by spinners on the raw material used in this country.

The affairs of the Corporation will be in the hands of an Administrative Council, the Presidency of which has been accepted by Lord Derby. The following gentlemen also have agreed to become the first Vice-Presidents of the Council:—Lord Ashfield, Lord Colwyn, Lord Emmott, Lord Lovat, The Rt. Hon. Sir Frederic Lugard, The Rt. Hon. Walter Runciman, Sir Frank Forbes Adam, Sir Henry Birchenough, Sir Edward Tootal Broadhurst, Sir Frank Hollins, The Hon. Sidney Peel, M.P., Mr. Thomas Shaw, M.P., and Mr. J. Arthur Hutton.

U. S. Trade with the East.

Attention has been called recently to the fact that the United States is now supplying from 10 to 12 per cent of the imports of India, whereas her share prior to the war was only 2.6 per cent. The valuation at the ports of India of American merchandise entering that country has advanced from £10,766,000 in the Indian fiscal year 1918-19 to £25,267,000 in 1920, and £35,298,000 in 1920-21, and while the American merchant houses established in India since the war are suffering from the present trade slump in

common with their British rivals, they are gradually strengthening their hold, and during the cold weather season India is full of American travellers and business men studying trade facilities.

This record of the growth of India's importation from the United States, says the "Trade Record" of the National City Bank of New York, is illustrative of the growth in the share which the Orient generally is making in United States export trade. Prior to the war, the share of our exports sent to Asia as a whole was only 4.8 per cent, advancing to 6.4 per cent, in 1916, 7.6 per cent. in 1918, 8.9 per cent in 1919, 9.3 per cent in 1920, and 10.1 per cent in the ten months of 1921 for which figures are available. The total value of United States exports to Asia advanced from 113 million dols. in 1914 to 772 million dols. in 1920, and will be about 500 million dols. in the calendar year 1921. The falling off in the exports to Asia in October, 1921, the latest month for which figures are available, is far less than that to any other of the grand divisions, the reduction in the value of October sales to Asia having been less than 2 million dols. when compared with October of last year, against a decrease of 13 million dols. in the exports to Africa, 19 million dols. in those to Oceania, 34 million dols. in the shipments to South America, 102 million dols. to North America, and 227 million dols. to Europe.

To India the exports in 1920 were practically ten times as much in value as in the year immediately preceding the war, the total value having grown from 10,379,000 dols. in 1914 to 99,828,000 dols. in 1920, and while the 1921 exports to that country show a decline, as they do to all other parts of the world, they will be for the current year approximately six times as much as in the year immediately preceding the war.

The figures of United States trade with India, adds the bank's statement, are illustrative of the growth of United States trade with all Asia and Oceania, which has jumped from 526 million dols. in the fiscal year 1914 to 1,773 million dols. in the fiscal year 1921. Imports alone from Asia and Oceania grew from 239 million dols. to 969 million dols., and exports thereto advanced from 197 million dols. to 804 million dols.

The following table shows the values of imports from and exports to the principal countries of Asia and Oceania in the fiscal year 1921, as compared with the fiscal year 1914 :—

	Imports		Exports	
	1914	1921	1914	1921
	1,000	1,000	1,000	1,000
	dols.	dols.	dols.	dols.
Asia Minor ..	14,295	18,894	2,394	11,064
Australia ..	17,089	31,461	45,775	120,986
British India ..	73,631	121,800	10,855	92,550
China* ..	40,311	118,875	26,346	144,686
Netherland East Indies ..	5,334	141,664	3,677	61,181
Hong Kong ..	3,086	28,211	10,696	22,042
Japan ..	107,356	253,210	51,206	189,182
New Zealand ..	5,125	22,238	8,950	47,601
Philippine Islands	18,162	94,354	27,305	85,925
Russia, Asiatic ..	2,489	3,564	1,215	979
Straits Settlements	26,308	107,478	4,185	14,927
All other Asia and Oceania ..	15,910	27,568	4,390	13,306
Total ..	329,096	968,917	196,994	804,429

† Including leased territory.

Indian Trade Tendencies.

In reviewing the Report of H. M. Senior Trade Commissioner in India and Ceylon (Mr. Thomas Ainscough) the *Board of Trade Journal* says :—

He points out that the year 1919-20 was one of "phenomenal" trade activity within the United Kingdom. He deliberately uses this word because the trade boom of that year was entirely abnormal, was based on unsound foundations, and gave rise to a fictitious prosperity, the false nature of which subsequent events have only too amply proved. In the United Kingdom manufacturers were inundated with the accumulated orders of nearly five years of war from all parts of the world and were obliged, in many cases, to decline lucrative business owing to their output being booked for months and even years ahead. The cost of living rose steadily, resulting in further labour demands, and there appeared to be no limit to the upward trend of prices for all classes of goods. In India the monsoon of 1919 had been a good one, trade was brisk and both exports and imports attained record figures, the value of the former exceeding that of the latter by no less than 56 per cent. This enormous balance of trade in India's favour, synchronising with a rise in the price of silver during the year from 48½ pence per ounce to 89½ pence per ounce, forced up the exchange value of the rupee well above two shillings. The end of the war found India with depleted stocks of foreign merchandise and with five years' arrears of purchases to make good. Moreover, she had accumulated very considerable buying power, as the country emerged from the war in a generally prosperous condition. The rise in exchange considerably enhanced this purchasing power. The natural result was that orders on a prodigious scale were placed in the United Kingdom, United States, Japan and other countries. The bulk of these purchases were made at the highest levels of prices. In February, 1920, the Indian Currency Committee Report was published and an impression was created in the minds of people that they might look forward to a period of high exchange rates for some time ahead. Further purchases of goods were made in overseas markets and the bulk of these orders were for delivery during the year 1920-21.

ECONOMIC DEPRESSION, 1920-21.

The past year opened, therefore, at a time of feverish activity and apparent general prosperity, but the boom proved to be a very short-lived one. In the United Kingdom manufacturers found in the early summer of 1920 that not only were there no further indents forthcoming at the price levels they were forced to quote, but the impoverished state of the world began to be apparent and appeals for cancellations of existing contracts came in from all the great consuming markets. This state of affairs became steadily worse and resulted by the end of the year in the wholesale curtailment of industry and unemployment on an unprecedented scale. India, being dependent on Europe and the United States for the sale of her produce, was soon affected by the changed conditions. The internal disorganization and financial chaos in and the adverse exchange rates ruling with Central Europe brought about a complete cessation in demand for Indian exports, such as jute, cotton, hides and oilseeds, which are the backbone of the export trade. The process of deflation of prices in the United States and the United Kingdom not only checked fresh purchases, but entailed very

heavy losses on stocks of tea and other commodities. Russia remained isolated from the rest of the world. The severe industrial crisis in Japan resulted in a marked falling-off in her consumption of Indian cotton. The monsoon of 1920 was a poor one and the average rainfall over the plains of India as a whole was 12 per cent below normal. The country was also suffering from many internal difficulties due to the results of war, such, for instance, as the serious shortage of rolling stock on the railways, which hampered the movement of crops for export. All these causes contributed by the end of 1920 to bring about one of the most acute periods of economic depression which had been experienced in India for decades.

In the meantime, the enormous volume of high-priced goods ordered at various times since the Armistice arrived at Indian ports in unprecedented quantities, the gross total value of the imports during the year being actually double the average of the five preceding years. This flood of imports, coinciding with a slump in the export trade, resulted in an excess of imports of merchandise of 79 crores and a net balance of trade against India of 49 crores. The price of silver in London fell from 72*d.* to 30*d.* per ounce during the year, and the effect of these two factors was a collapse in exchange for rupees from 2*s.* 4*d.* (Telegraphic Transfers) on 1st April, 1920, to 1*s.* 2½*d.* (Telegraphic Transfers) on 7th March, 1921. Importers were consequently faced in most cases with extraordinary heavy stocks of piece-goods, metals, hardware and general imports purchased at the top of the home market at a time when exchange was in the region of 2*s.* or over, and these goods arrived to a stagnant market with exchange standing at about 1*s.* 3*d.* or 1*s.* 4*d.* In most cases importers and dealers were either not able to or were unwilling to fix exchange at the time of placing the order, with the result that they had to meet losses varying from 50 to 70 per cent on the cost price of the goods. Moreover, inasmuch as prices in the producing centres had fallen considerably there was the additional menace of their being undersold by more recent purchases.

DEADLOCK IN THE IMPORT TRADE.

Seeing that they were obliged to face losses which, in many cases, they were utterly unable to meet, the Indian importers in Bombay, Delhi and elsewhere sought for a means of escape. The first move was taken by the Native Piece-Goods Association of Bombay, which body—in December, 1920—passed a resolution pledging its members to refrain from settling any contracts at a lower rate than two shillings to the rupee, on the grounds that they had been misled by the Government statement to the effect that the Currency Committee's recommendations advocating the linking of the rupee to gold at the ratio of Rs. 1=one-tenth of the gold content of the sovereign would be adopted. This was followed by the passing of similar resolutions in Delhi, Amritsar and other markets. Most Indian importers in these centres declined to accept their drafts, failed to meet them at due date and refused to take delivery of the goods unless at an exchange rate of 2*s.* The result has been a complete deadlock and utter stagnation in the market, which has lasted for very many months, but which is showing signs of gradually clearing. The burden of the strain has been borne by the banks, who have been saddled with a steadily increasing volume of overdue bills, almost all of which have been discounted on the other side. It is estimated that the value of repudiated and overdue drafts in all India and Ceylon some months ago reached the total of 30 millions sterling. The banks have adopt-

ed throughout a most helpful and broadminded attitude. They realized that to enforce their just claims by actions in the Courts would merely have precipitated a severe crisis which would have delayed recovery indefinitely. Accordingly, they have contented themselves with pressing their clients as far as was reasonably possible and holding the bills until such time as the market improved. There has been to all intents and purposes a moratorium, and importers in many cases have not yet been forced to meet their losses. On the whole, there is ground for hope that the situation will be cleared up without any undue shock to credit conditions.

THE BLOW TO DIRECT TRADE.

As a result of the increasing general prosperity of India and the spread of education and knowledge among the Indian mercantile community, a distinct tendency towards direct trade between Indian importers and overseas suppliers has been one of the features of the past few years. This movement has been particularly noticeable in Bombay, and also in the inland distributing centres such as Delhi, Amritsar and Cawnpore. There is no doubt whatever that it has contributed materially to the extension of British trade in India, and it would appear to be a tendency which is likely to grow. London, Manchester and other home export houses have in the past been prepared to ship to approved Indian indentors, usually on D P (documents against payments) terms, the branches of the exchange banks in India maintaining the drawer's lien on the goods until the drafts were met. In certain cases the goods were shipped documents against acceptance. The banks have greatly facilitated the trade in up-country centres, such as Delhi and Amritsar, by clearing the goods through to destination and by storing them until the drafts were honoured. It is a most noteworthy fact that the difficulties in the recent crisis have been greatest in those centres, such as Delhi and Bombay, where the most liberal financial and trading facilities have been granted by British exporters to Indian importers and bazaar dealers. Liabilities have been repudiated and drafts dishonoured on a scale hitherto unknown. It is only natural that home firms who have hitherto been willing to accept indents direct from bazaar importers and to draw on them in the usual manner, should be doubtful whether the trade is worth carrying on if the Indian importer has no hesitation in refusing to meet his bills when the market goes against him and he is faced with a heavy loss. The inevitable result is a strong reaction on the part of many British exporting houses against direct dealings with the bazaar, and this can only be overcome by a changed attitude in certain quarters in India towards the responsibilities attaching to a business contract.

After giving much study to the question, Mr. Ainscough is convinced that, if carefully conducted on sound lines, and with responsible Indian firms, the direct trade is a reasonably safe one, particularly in those cases where the home shipper has a resident representative in India to safeguard his interests. It must be admitted that in the boom of 1919 and early 1920 credit facilities had been given in many cases to Indian firms who were not of sufficient standing to warrant them. Moreover, the recent crisis is entirely abnormal. The trade as a whole should be judged by its results over a lengthy period of years. It will, in his view, be a great pity, both from the point of view of the shipper and of the importer, if this trade receives too great a setback through the action of a certain number of unprincipled individuals. He appeals to the many reliable Indian im-

porters to use their influence with a view to the re-establishment of this market in the eyes of the world so that it may be possible in future to open up even closer trading relations between the two countries. He also expresses the hope that British export houses will, in future, exercise greater discrimination in the granting of credit and will, wherever practicable, appoint resident representatives to watch their interests.

The Changing Indian Market.

Further reviewing Mr. Ainscough's Report, the *Boards of Trade Journal* says :—

In the short review which we gave last week of Mr. Ainscough's latest Report on the Conditions and Prospects of British Trade in India, we were only able to indicate its scope in general terms. The Report is, however, one of the most up-to-date, detailed and comprehensive documents published on the trade and industries of the country and it should be filed for purposes of study and reference in every mercantile and financial house with British-Indian connections. In this article we propose to touch upon the competition which the United Kingdom is being called upon to face both from other countries and from the growing industries of the Dependency herself.

Mr. Ainscough's Report shows that the recovery made by the United Kingdom since the Armistice has been most remarkable. Her share of the total trade is now 44 per cent, that is 3 per cent above the pre-war figure. Her share of India's imports has increased from 46 per cent in 1918-19, the lowest proportion touched during the war, to 61 per cent in 1920-21, and is now only 3 per cent less than in 1913-14. In 1920-21 the United Kingdom shipped to India no less than £204,000,000 worth of goods, of which about 95 per cent represented manufactured articles. The satisfaction with which one surveys this recovery is, it is true, clouded by the contemplation of the very heavy stocks in this market. Nevertheless, the stocks of foreign competing goods are just as heavy, and the really encouraging feature of the situation is that, for the first time since the war, British shippers have been on equal terms with their new foreign competitors and have recovered their trade to such an extent that they are now within 3 per cent of their pre-war position.

It is somewhat discouraging that the United Kingdom is not able to take a greater proportion of Indian exports of produce and manufactures. During the war, owing to the large supplies of foodstuffs and produce required for the armies in the field, she was able to increase her takings from 24 per cent in 1913-14 to 30 per cent in 1919-20, but during the past year the proportion has fallen to 22 per cent, which is lower than the pre-war figure by 2 per cent. It is a great potential source of weakness that the British Isles should only take from India less than one-half the value of goods which she exports to India. Apart from economic laws, there is a growing tendency all over the world for a country to purchase its imports from those other countries which are the most important customers for its own produce. India's most important markets apart from the United Kingdom are normally Germany, the United States, Japan, Italy, and France, and there is every likelihood that she will tend to buy more and more from those countries. This question is one which is assuming importance in recent discussions as to whether India should adopt Imperial Preference. This matter

is in abeyance pending the investigations of the Indian Tariff Commission. The argument commonly used, however, is that as the British Empire as a whole only takes 34 per cent of India's exports and supplies 66 per cent of the country's imports, India, on balance, would lose more than she would gain by granting preferential rates on Imperial goods at the expense of the foreigner. Furthermore, there would be a considerable risk of retaliation by those foreign countries which might bear heavily on India's export trade. Every effort should be made to stimulate imports of Indian produce and manufactures to the United Kingdom and to retain our valuable entrepot trade which has in the past been of incalculable benefit in stimulating British exports.

FOREIGN COMPETITION.

There are distinct signs that American and Japanese competitors, having gained a foothold during the war, are likely to remain, and German and Belgian competition is steadily growing. The most important factor to-day is the competition from the United States.

AMERICAN COMPETITION.

American shipments to India advanced from £10,766,000 in 1918-19 to £25,267,000 in 1919-20 and £35,298,000 in the last year under review, the respective shares of the total imports into India being 9.5, 12.1, and 10.5 per cent. The United States is now second only to the United Kingdom, having overtaken Japan in 1919-20. The principal import, as might be expected, is motor cars (£6,486,000) followed in order of importance by mineral oils (£5,300,000), iron and steel (£5,199,000), machinery (£4,026,000), hardware (£2,255,000), instruments and apparatus (£1,335,000), and tobacco — mainly cigarettes — (£1,089,000).

Although the American merchant houses established in India since the war are suffering severely from the present trade slump in common with their British rivals, they are gradually strengthening their hold. Mention was made in H. M. Trade Commissioner's last Report of the position of a few large American houses in India. During the past two years their number has increased. Another prominent steel export organization has opened branches in the country. The Baldwin Locomotive Works have also opened a permanent office in Calcutta. There are now at least three American firms conducting the commission indent business with the bazaars, while during each cold weather season India is full of American travellers and business men studying possibilities.

JAPANESE COMPETITION.

Imports from Japan, after expanding at a rapid rate throughout the war, received a setback in 1919-20, but recovered in 1920-21, when they reached a total of £26,430,000. Japan now supplies 7.9 per cent of India's imports, receives 9.5 per cent of her exports, and the Japanese share of the total trade is 8.6 per cent.

The main items of import from Japan in 1920-21 were cotton piece-goods (£8,371,000), cotton yarn (£4,899,000), silk manufactures (£2,959,000), cotton hosiery (£1,393,000), matches (£1,296,000), and general hardware (£758,000). The balance of approximately £7,000,000 was spread over a very wide range of articles. During the war, owing to purely fortuitous circumstances, the Japanese entered trades in which they could never hope to compete in normal times, *viz.*, cement, iron and steel, electrical instruments and accessories, cables, paints, and tea chests. During the past year, when Indian buyers were at

last able to revert to their normal sources of supply they have done so, with the result that Japanese shipments of these goods, for the supply of which Japan is not economically well placed, have fallen considerably. On the other hand the shipments of goods in which Japan can compete have steadily advanced and it is now possible to estimate where Japanese competition will be most serious in the future. The most severe rivalry will be met with in cotton yarns and piece-goods. In cotton hosiery Japanese makers control the market and supply 73 per cent of India's imports. Matches, of course, are largely non-competitive, and the same remark applies to silk manufactures. In cheap apparel, hardware, glass and earthenware, paper, stationery, and the countless articles used in the bazaars, where showy exterior and low price are the main desiderata, Japan is bound to increase her trade. In this business she has largely taken the place of Germany and Austria, and competition with British goods is not so severe, as our shippers usually supply the higher grades.

Japanese merchants in India have sustained very heavy losses in the recent slump, and several houses have abandoned their Indian branches. During the war the Mitsui Bussan Kaisha and the Japan Cotton Trading Company occupied first and second place respectively in the list of piece-goods importers in Calcutta. By the year 1920 they had, however, fallen to fourth and fifth place, and the British distributors had regained their position.

GERMAN COMPETITION.

The last year's statistics are noteworthy as they record the re-entry of Germany into the Indian market with shipments valued at £4,748,000, of which dyestuffs accounted for £1,203,000, metals £864,000, salt £350,000, hardware £291,000, glass and glassware £203,000, paper £187,000, and silk manufactures £167,000. German shipments are steadily increasing month by month, and are spread over a constantly widening range of products. It is probable that when the returns for the current year are published it will be found that the German position in India's import trade will have, to a large extent, been regained.

The principal cause for the revival of German competition is the great advantage afforded by the depreciated mark exchange in the case of those goods for which the raw materials are obtained in Germany. Where Germany has to import her raw products, *e.g.*, in the cotton and woollen textile trades, the exchange benefit is, of course, to some extent neutralized.

German competition is at present being most severely met with in aniline and alizarine dyestuffs, and notwithstanding the footing gained by British makers during the war and the excellent distributing organization which they have built up (which is quite as efficient as the pre-war German organization) they are being undersold by the imported German article, and — probably largely owing to the exchange — the difference in price in most cases is as much as 40 to 50 per cent. German imports of dyes during recent months have exceeded the British shipments, and it is difficult to find any remedy which our makers can employ in dealing with this difficult situation. The same state of affairs is found in the machinery trade. Many instances have recently occurred where orders for rice mills, sugar plants, etc., have been placed in Germany owing to a 50 per cent lower quotation than was obtainable from British makers. Buyers in India state that they also obtain earlier deliveries and greater consideration from the German manufacturers.

Anti-German feeling does not exist among the Indian community. On the contrary, there is every disposition to buy German goods if they are cheap and suitable. In normal times Germany is one of India's best customers and takes very large quantities of produce such as hides, cotton, oilseeds, jute, etc., etc. It is only to be expected that, in India, Germany will find one of the most promising fields for trade expansion in the near future.

BELGIAN COMPETITION.

The remarkable recovery of industrial Belgium is clearly reflected in the imports into India for last year, which reached a total value of £5,326,000, and were almost double the value of the pre-war shipments. Nearly 50 per cent consisted of iron and steel in various forms. It is exceedingly likely that the bulk of the dyestuffs and a certain proportion of the paper, glassware, and textiles were of German origin shipped *via* Antwerp. Belgium is now underselling British steel makers in almost all kinds of constructional steel, and is regaining her Indian market for window glass. Her shipments are steadily increasing each month, and the figures for 1921-22 will probably show a very considerable further advance. The competition is perfectly straightforward, and can only be met by quoting as low prices and as early deliveries.

COMPETITION OF INDIAN INDUSTRIES.

The competition of the products of the new industries in India has not yet been severely felt owing to the great volume of accumulated orders for British goods which was liquidated last year by the heaviest shipments ever made by the United Kingdom to India, amounting in the aggregate to no less than £204,000,000. Since those orders were executed local competition in most products has not been experienced owing to the fact that the glut of imported goods in India brought about a depression in trade, which has affected imported and domestic productions alike, and until the present large stocks of sundry goods are considerably reduced, there is little likelihood of fresh business being placed on an extensive scale.

TEXTILES.

Indian mills competition in cotton yarns and piece-goods is undoubtedly increasing, and Mr. Ainscough has devoted a special section to it in his Report. Competition in woollen goods, blankets, serges, coatings, etc., will become more acute, as the few mills in India are steadily improving the quality, finish and dye of their productions and there are several new mills either under construction or projected.

IRON AND STEEL.

The demand for steel last year was so great that British shipments increased enormously, and the competition of the Tata Steel Works was not realized. When the extensions to Jamshedpur are completed, however, the production available will be 425,000 tons of finished steel per annum. Moreover, the plant will have a large reserve of rolling power, and the steel will be diverted from one mill to another in accordance with the fluctuations of the market and the competition which enters it. It is expected to work up to full production in four years' time. In addition to this iron castings will be produced in steadily increasing quantities both at Barakar and at the new Indian Iron and Steel Company's works at Asansol. The two large new projects for iron and steel works are still in the preliminary stage, but there would appear to be little doubt but that the schemes will be proceeded with, in which case, in the course of the next five to ten years we shall see at least three steel works in India of the size of the Tata concern.

Competition in steel bars, billets, plates, and sections of all kinds will rapidly and steadily increase, and it must always be remembered that, whether a protective tariff is or is not imposed, Indian manufacturers always have a most substantial natural protection in the costs of freight and handling between the United Kingdom works and the local market.

CONSTRUCTIONAL WORKS AND MACHINERY.

The engineering shops in India are competing more and more in structural steelwork and simple steam engines of all kinds. The supply of steel on the spot in the shape of plates and sections will tend to stimulate this competition. Hitherto, most of the wagon-building in India has merely consisted of assembling parts and sections imported from the United Kingdom, but with a steel supply at their doors local engineers are bound to become more ambitious.

Jute mill machinery will shortly be produced at Jamshedpur and tea machinery at Agartara, near Calcutta. There are also several works near Calcutta which are engaged on the manufacture of the essential parts and stores used in jute mills, and it is understood that a number of quite good jute looms have already been turned out.

MISCELLANEOUS INDUSTRIES.

It should also be noted that the Calcutta jute mills are encroaching more and more into the Dundee trade in the finer Hessians, canvas, etc.

With the development of large local supplies of bamboo pulp, the extension of the paper-making industry is certain, and the time may not be far distant when India will become a factor in the paper markets of the world.

Boot and shoe manufacture has received rather a setback in the past year or so, and the plans for the erection of factories capable of producing two million pairs per annum have not yet matured. A research tannery and boot factory, equipped with the latest plant, will shortly be erected in Calcutta, and there is little doubt that India will, year by year, convert increasing quantities of her hides and skins not only into leather but also into boots and shoes and manufactured leather of all kinds.

The manufacture of concrete pipes by the Hume process is proceeding and is likely ultimately to affect the large import trade in cast-iron pipes for waterworks, etc. The existing cement works are producing large quantities and a number of new works are either under construction or projected. The cement trade with the United Kingdom is very large but freight bears such a high proportion to value that local works should have a decided advantage. Paints, glassware, pottery, and soap are other articles the local manufacture of which shows a tendency to develop, and in which competition will become more acute.

INDIAN COSTS.

The enormous increase in the costs of production in the United Kingdom since the war acts as a great handicap in competing with Indian goods. Although the producing costs in India, largely in consequence of labour troubles, have advanced considerably, the increase has not been relatively so great as in either England or America. Moreover, taxation is much lower in India. High freights also act as a deterrent to imports. The most important drawback, however, is that in a poor country such as India high prices of imported goods neutralize the advantages they possess of quality, durability, and finish, as the consumer has literally not the money with which to purchase them, and although he frequently would greatly prefer the imported article he is forced to buy the locally-made one as it comes

within his means. This process of substitution has been very noticeable during the past two years, particularly in the case of textiles.

In conclusion, Mr. Ainscough reiterates the remarks made two years ago, which still apply with just as great force to the position to-day. They are as follows:—

"It will be observed that considerable changes are likely to take place in the character of the import trade in future, which will require many readjustments by British exporters to India. The import trade in several articles is bound to decline, and the competition in many more will become exceedingly acute. India, however, stands at the commencement of an era of great expansion. The increase in her wants is likely to be so great that the general volume of our trade with her is likely to increase rather than diminish. Although there will be many changes in the character of our shipments, I look forward with confidence to a great expansion in our export trade to India when the difficulties and pre-occupations of reconstruction in Europe have been met, and particularly when labour conditions at home enable British manufacturers to quote competitive prices and to give reasonable deliveries.

The extension of industries in India will not only increase the general prosperity of the country, and thereby raise the standard of living of the people, but will tend in the long run to raise the standard and widen the range of commodities imported from overseas, and will make the country a more valuable member of the Empire than she has ever been hitherto.

Coconut Industry of Ceylon.

A Kalutara Correspondent writes to the *Times* (Trade Supplement):—

There is remarkable activity in the export of coconuts in bags to Egypt, Holland, and the United Kingdom. The United Kingdom's imports in 1921 up to the time of writing amount to at least 11,500,000 nuts, or more than double the 1920 total; the imports of Holland have almost quadrupled, amounting to 2,500,000; while those of Egypt have doubled and total about 5,500,000.

So far the United States has drawn her coconut supplies from tropical America, the Philippine Islands, South Sea Islands, Samoa, Fiji, Tahiti, New Guinea, etc. Her large lumber trade with Australia makes room for coconut cargoes from the Pacific Islands at nominal freight rates, but still it seems that 1,000 coconuts landed at New York cost early £20. If this is so, it would be worth importing coconuts from Ceylon. The Colombo to New York, Boston, Baltimore, and Pacific ports freight rates now vary between 40s. and 50s., being about equal to the freight rates to European ports, and nuts could be bought in Ceylon at from Rs. 60 to Rs. 65 per 1,000.

Roughly, the total exports from Ceylon in 1920 were about 8,000,000 nuts. In 1921 they increased to 20,000,000.

Except for a little buying of bristle fibre for the Belgian and Japanese markets, trade in all lines of coconut fibre may be said to be dead. Up to November 15,47,229 cwt. of yarn, 79,288 cwt. of bristle fibre, and 89,828 cwt. of mattress fibre had been exported. The yarn has chiefly gone to Germany and the United States; the bristle fibre to Belgium and India; and the mattress fibre to the United Kingdom, Germany, and Africa. The present quotation for ordinary bristle fibre is Rs. 13 per cwt.

COPRA AND COCONUT OIL.

Two small parcels of copra totalling some 25 tons

were recently shipped to Norway and Sweden. The market may be said to have been quite flat during November except for some small fluctuations. At present prices according to quality vary between Rs. 75 and Rs. 84 per candy of 560 lb. Resumption of purchasing by Germany and Holland, two of the chief consumers of Ceylon copra, is eagerly awaited here.

In pre-war days the United States took from Ceylon at least 1,000,000 lb. of copra; to-day that country takes none. It is said that it does not pay to buy in Ceylon, the Straits Settlements, or Dutch East Indies, owing to the high price of the material and high freight rates. During the war period, to avoid the submarine menace, the United States drew copra from some 30 different sources of supply, including the Philippines, which supplied some 225,000,000 lb., or half of its 1919 requirements. It may be that American business men are reluctant to abandon some of these connexions.

Small quantities of coconut oil have recently been shipped to Norway and Egypt. The market is generally very inactive. Ordinary oil is now available at between Rs. 505 and Rs. 545 per ton.

Here again Ceylon's pre-war trade with the United States has gone to the Philippines, which now export about 250,000,000 lb. per annum in special oil-tank ships, a great advantage, which Ceylon does not share.

Some exports of poonac by oil-mill owners chiefly to the United Kingdom at about Rs. 5 per cwt. have been made. Buying for the Belgian, German, French, and Dutch markets has been non-existent for some time.

DESICCATED COCONUT.

There is some buying of desiccated coconut for the United Kingdom, Belgian, Spanish, Swedish, United States, and African markets, but for some time there has been no active forward contract demand, so the price has remained stationary at about 2½cts. per lb. This is a very unsatisfactory figure considering the price of copra, and desiccated coconut millers have closed their mills.

Usually there is a drop in desiccated coconut prices when the Christmas demand is covered, and mills are closed for a time until the demand revives, when work is resumed. This takes place, as a rule, about May.

Exports of about 85,000,000 lb. in 1921 to the time of writing are equal to about twice the quantity exported in 1920. Imports by the United Kingdom increased enormously to about 28,000,000 lb. This is about 6,000,000 lb. short of the United States's imports, which have also increased. There is a marked improvement in the quantity imported by all other buyers.

OUTLOOK FOR COCONUT GROWING.

The steps taken recently in the Dutch East Indies to grow and manufacture coconut products on a scientific basis, the general activity in coconut growing in French Oceania, French Indo-China, and Portuguese East Africa, the strong support given by the Government of Brazil in the extension of the Brazil coconut area, the success of experiments made at Sungei Nepha in the F.M.S. with the quick-growing dwarf coconut, and other world movements, have been noted by a few of the more intelligent Ceylon coconut growers. They realize the importance of introducing early-fruited, heavy-bearing varieties like the Maldivian and dwarf kinds of coconut, scientific seed selection, manuring, study of coconut diseases, cheapening the cost and improving the quality of produce already made here, adding new

lines of manufactured articles, and generally keeping pace with present and probable future needs.

It is found that with the addition to desiccated coconut mills of a newly patented rotary press an almost acid-free white oil and white poonac could be turned out in a very short time direct from the raw coconut. About 80 of these presses are now working very satisfactorily in Cochin, but they are as yet hardly known here.

At a new factory put up at Colombo by Messrs. Frad Co., new and greatly improved machinery has been installed to produce desiccated coconut of equal length, a point of very great importance in confectionery manufacture. A machine is employed to shake into cases the manufactured product instead of tamping it down, and thus prevent the accumulation of oil and the spoiling of the desiccated coconut at the bottom of packages. Experiments are being conducted at the same factory to discover means of turning out under the most modern hygienic conditions desiccated coconut as free from oil as possible. Its present output is 2,000 cases of desiccated coconut a month. When some additions, now in hand, are completed, the output will be expanded to 3,000 cases.

A very large fibre manufacturing plant, the de Soysa Mills, equipped with machinery to turn out prettily coloured brushes, brooms, door-rugs, matting for bungalows, cricket pitches, etc., was recently erected at Madampe. The factory is under European management.

The Low Country Produce Association is now trying to introduce the manufacture of white copra, common to the Malabar coast, which realizes from £3 to £4 more than the local ordinary product. There is no difference between the Malabar and the local well-manured estate coconut, so there is no reason why Ceylon copra should not be made to equal the product of any other land.

Taking all things into consideration, coconut growing is one of the soundest investments. There is little British capital employed in it here. There is much good coconut land available in Ceylon and Malaya. If British capital cannot wait for four to ten years, according to the variety planted out, for the return, it might take advantage of the many good opportunities which often occur here to buy producing coconut estates.

Concessions for Railway Construction.

By a Law which was published in "Journal of Laws of the Polish Republic" (*Dziennik Ustaw Rzeczypospolitej Polskiej*) No. 88 of 10th November, and which came into force on the same day, new conditions are laid down on which concessions will be granted by the Polish Government for the construction and ownership of railways in Poland by private enterprise.

The following are among the chief points of the 22 Articles composing the Law:—

Permits for the carrying out of preliminary surveys are granted by the Minister of Railways in conjunction with the Minister of War.

Concessions are granted by the Chief of State on the strength of a decision taken by the Council of Ministers.

Financial assistance for Treasury funds of the Republic must be sanctioned by the Diet.

Concessions can only be granted to trustworthy persons who can give a sufficient guarantee that they can finance and carry out the undertaking.

The concessionaire must have his residence in Poland.

After the term for which the concession was granted, the railway, together with all land, buildings, etc., becomes the property of the Polish Republic without any compensation.

The Government has the right to purchase the railway before the expiration of the concession on the basis of the average of the net profits for the best six of the last eight working years of the line.

The State may share in profits or decrease tariffs should profits exceed a certain limit; or, it may allow increased tariffs, grant the concessionaire financial assistance, or institute compulsory administration on his behalf, if profits do not cover cost of exploitation of the line. The construction of the line must correspond with general regulations and must be carried out under the supervision of the Ministry of Railways, at whose request the concessionaire will have to erect new buildings, alter and complete old ones at his own expense, and to comply in general with the regulations of the Ministry in regard to the upkeep of the railways.

Equipment of Vocational Education.

George B. Thomas, Portland Board of Education, Oregon, writes in the *Boston Educational Journal* :—

The school first began in 1908 under the name of the School of Trades. Owing to the generosity of Simon Benson, a public spirited citizen, who gave \$100,000 for this purpose, the school moved into a new building, adopting the name Benson Polytechnic School, which now offers three-year courses in printing, pattern-making, cabinet-making, carpentry, machine shop, sheet metal, operating steam engineering, architectural drawing, machine blacksmithing, tool-making, electrical construction, plumbing, gas, fitting, moulding and foundry practice, gas engine and automobiles and mechanical drawing. It is important to train workers for the trades that predominate in the locality. This assures mutual benefits to the boys and to the industries of the community. The students devote half their time to shop work and half to drawing and academic subjects. The school started with an enrolment of 127 students in the year 1908, and was practically at a standstill so far as enrollment was concerned until 1917, when the enrolment reached 460. Then the school began to equip from a productive standpoint. The result was that it produced workmen who were in demand and the enrolment to-day is 1,462.

The shops are equipped with up-to-date machines, large enough to enable the boy to turn out real work, such machines as they find in actual industry, and very much in advance of the average shops. There is nothing but the most modern and highly developed machinery which is the important factor that makes skilled workmen of the students, who are more and more in demand by employers. These conditions stimulate the interests of the boy in his work as he realizes that he is working in a situation that approaches that of an actual shop, with real machines to work with, and that the training which he is receiving will make him an efficient producer when he graduates. The efficient mechanic is not the man who makes the expensive mistakes by using the cut and dry method. He gets it right the first time because he has been scientifically trained. It is this kind of mechanics that are turned out from the Benson School.

Too often the mistake is made of equipping trade schools with small tools not much larger than toys. It is just as essential to teach production as it is theory.

Because of this mistake the manufacturer is loath to give school graduates work until they have served an apprenticeship in real production plants. One can readily understand this because of the enormous investments in plants that require them to produce, as the real object is profit. In these days of competition, production is the real essential.

Another object we should keep in mind is to fit students to make a success of their trade from a financial standpoint, and to do so they must be provided with the machinery and equipment of modern shops, to learn to operate and have thorough knowledge of their construction.

It is the practice of the Bensen School to have the boys thoroughly familiar with each machine, the work it is designed for and how much it should produce.

First, the boys disassemble the machines and re-assemble them again, and in many cases re-build them. Before starting a job they make a careful estimate of the time that will be required to finish it. They are trained to calculate the cost of the job in material and labour plus a certain per cent for over-head expenses and profit. At every stage in the process a check is taken to compare with the original estimate. This gives them a thorough knowledge as to the construction and capacity of each machine, enabling them to figure the actual cost of production. General shop practice should be thoroughly taught. Arrangement of equipment is another very essential point, often enabling plants to produce to such an advantage, that it is, from a financial standpoint, often the real factor that secures the contract.

All index tables calculated by machine builders that are placed on machinery pertaining to speed, feeds, and other mathematical calculations are removed and the boys taught to make their own calculations. For example: On a lathe with an eight-thread per inch lead screw, to produce a four-thread per inch screw, the cutting tool must travel twice as far at each revolution as the lead screw. To produce a sixteen-thread to the inch, the tool must travel half as far at each revolution as the lead screw. If you are chasing a thread the same pitch as the lead screw, the work and the lead screw make the same number of revolutions. If you are chasing a thread any other pitch, you must gear accordingly. The students are taught to make many other calculations along these lines for milling machines, grinding machines, and machinery that produces finer grades of work.

To have a course in foundry practice in cast iron only, is a mistake, because of the fact that cast-steel is being specified more and more and fast taking the place of drop forgings and cast-iron. Our foundry is up to date with a three ton cupola and the boys are taught metallurgy from a standpoint of foundry practice. They are shown that smelting is a chemical action of head and fluxes that refine the iron and are taught to produce the different grades of grey-iron, cast-steel, brass, bronze, and many of the alloys that are used in the industries in a practical way.

In every lesson students start and finish each job, from the designing and drawing to the completed job and pass a thorough examination with a view of having them take their places in the world as finished workmen. Benson's boys are in demand at top wages in the best shops of America.

Krupps have acquired an interest in a Hamburg firm of importers of British coal.

Some Recent Inventions.

In the course of an interesting article on the march of Science, the *Chamber's Journal* says :—

Few mechanical contrivances have been brought to a higher degree of perfection than the electric dynamo, more especially in regard to small sizes of this device. It might be expected, therefore, that attempts would be made to provide electric light on "push-bikes" by means of a small generator driven by one of the wheels. A machine of this type was described in these notes a few months ago. That forming the subject of the present note is somewhat similar in design, but is driven by the tire instead of by the rim of the front wheel. The dynamo is carried on a bracket clamped to the front-fork, and the spindle is set radially from the centre of the wheel. When the dynamo is in action, a small steel pulley is pressed up against the side of the tyre, and this causes the dynamo spindle with its armature to rotate at a very high speed. Both head and tail lamps are lit from the dynamo, and the apparatus is easily fixed to any machine. No attention is required other than the pouring in of a few drops of oil every three months. The lamps are unaffected by wind, and the light is available even when the bicycle is being propelled at a walking pace.

ELECTRIC LIGHTING BY WIND-POWER.

Its employment being subject to no restrictions, wind provides the nearest approach to free power available in this country. Any one may erect a windmill on the top of his house, or on a post or a tower on his ground. The force of the wind, however, being so variable, storage in some form or other, either of the power developed or of the resultant product, is essential. The old time miller, dependent upon wind-power, ran his mill when the wind served, and stored the meal and the flour for sale as required. The pumping of water also offers easy storage, and windmills are much used for this purpose. Moreover, when pumping, they work night and day without any attention. Another purpose for which wind-power has been used with more or less success is the generation of electricity. Here, again, storage is available in the form of a battery. Until recently wind-electric installations have taken the form of ordinary windmills or those of the disc type. As an electric dynamo, if it is to be built, to work at a low cost, must run at a high speed, and ordinary windmills run slowly, a considerable amount of expensive gear has had to be interposed between the windmill and the dynamo. What is known as a wind dynamo has, however, been devised lately, this consisting of a small electric generator with a two-bladed windmill, similar to an aeroplane-propeller, mounted upon the spindle. A row of these little dynamos is carried upon a swivelling cross-bar at the top of a steel pole, the windmills being set facing the wind by means of the usual tail. Each dynamo is rated at 40 watts or about one-eighteenth of a horse power. A storage-battery is, of course, required, and the dynamos being charging in winds of fifteen miles an hour. By an ingenious device, worked by the pressure of the wind, the circuit is connected up as soon as the dynamos are running fast enough to charge the battery, being automatically disconnected again should the wind fall below a pre-determined force. The apparatus is entirely automatic, and will go on charging throughout the twenty-four hours so long as enough wind is available. With the advent of the $\frac{1}{2}$ -watt lamp, which takes so small an amount of current, appa-

tus of this description should be quite within the range of practical politics for small country-houses, situated in places where there is sufficient wind.

AN INNER TUBE WHICH DEFIES PUNCTURES.

Tire-punctures still continue to be the bugbear of the motorist. This drawback, however, has been largely overcome by an ingenious form of inner tube, and although this appliance has now been obtainable for several years, many of our readers are probably still unfamiliar with the benefits accruing from its use, and the principles involved in its construction. The tube is in no sense puncture-proof, although its walls are thicker than those of the ordinary pattern. When blown up, the usual type of inner tube is expanded consequently the rubber is to some extent in tension, with the result that, should a puncture be made, there is little or no tendency for the whole to close up. The tube which forms the subject of this note, however, is very much larger in cross-section than the inside of the outer cover, and when first inserted before it is blown up, the tube is in a deeply corrugated condition. The pressure of the air flattens out the corrugations by compressing the rubber therefore, when a puncture occurs, the rubber closes up and prevents the escape of air. Owing to their thickness, also, these tubes are said to last very much longer than those of the ordinary type. Experience has proved that nails and other small objects can pass into the tube and be withdrawn without resulting in any loss of pressure.

AUXILIARY SPEED-GEAR FOR FORD CARS.

Excellent though the Ford car is for ordinary purposes, it has the drawback of possessing only two speeds, at the lower of which the car merely crawls, while the speed on the top gear is not fast enough for many owners without racing the engine. To overcome this drawback, an auxiliary gear-box has been brought out, which is interposed at the front end of the transmission shaft. It is a two speed gear, whereby the shaft can be speeded up or down, and it has the effect of giving the car six forward speeds—namely: (1) the slow speed speeded down; (2) the ordinary slow speed; (3) the slow speed speeded up; (4) the high speed speeded down; (5) the ordinary high speed; (6) the high speed speeded up. The auxiliary gear also, of course, gives three reverse speeds; the present speed, and that increased or decreased. Two models of this gear are made, one for the Ford-truck, and one for the model T. The weight added to the car is about 30 lb.

A SILENT, UNBREAKABLE CLOCK.

A clock that can be thrown about without being hurt, and whose tick is inaudible, has certain obvious advantages. These desirable features are obtained by embedding the clock in a thick, soft rubber case, only the face being exposed. This timepiece can be knocked off a mantelpiece with impunity, and it can be stood upon highly finished surfaces without risk of scratching them. The rubber case renders the tick inaudible, a great advantage in a bedroom for those who cannot sleep in company with the tick of a clock. Moreover, a clock which cannot be damaged, no matter how carelessly it is packed, will appeal to all travellers, especially as it can be obtained with a luminous dial if desired. Various patterns are produced, including a special type for the dashboard of cars, for which purpose it has the advantage of being undamaged by the vibration.

Danish farmers are badly hit by the low prices ruling on the British market for agricultural produce, as well as by the dumping of overseas butter,

Australian Taxation Methods.

A Melbourne Correspondent writes to the "Times Trade Supplement" :—

The Commonwealth Royal Commission on Taxation, the members of which represent all sections of the community, has presented its first report to Parliament. Among the recommendations are an increase in the allowable deduction for children from £26 to £30, the adoption of the five-year averaging system for primary producers, concessions to mining prospectors, and the exemption of bonus shares from taxation. The appointment of a Board of Appeal to adjudicate upon disputes between tax-payers and the Taxation Commissioner is also suggested.

In regard to exemptions, the Commission states that it is not convinced of the necessity for making any material changes. It is suggested that the exemption for single persons should be raised from £100 to £104, in order to exempt wages up to £2 per week, and that the imposition of the £1 tax upon gross incomes of not less than £100 should be abolished. At present the exemption for single persons without dependents diminishes at the rate of £1 for every £5 by which the income exceeds the amount of the exemption. The Commission expresses the opinion that the rate of diminution should be the same as in the case of married persons, namely, £1 for every £3 by which the income exceeds the amount of the exemption. This alteration will mean that the exemption will disappear when the income reaches £416, instead of £600, as at present. The view is expressed that the exemption of £156 for a married person without dependents does not need alteration at present.

MINING INDUSTRY.

Close investigation was made into the question of taxing profits on the sale of mining leases. The report states that the prospector is the hope of the declining gold-mining industry, but the responsible chiefs of the industry seriously assert that the Federal income-tax upon the profits of the sale of a mining lease — the chief means by which a lucky prospector may reimburse himself for years of privation and solitary toil — falls with such crushing weight that the best men are discouraged, and some cannot now be persuaded to undertake the work at all. An instance is given of a man who discovered a mine after years of skilled searching, and sold the lease for £10,000. The Commonwealth claimed £3,421 as tax, and the State claimed £2,300. This would be a very formidable deduction if the whole consideration were paid in cash. A large part, however, is often paid in shares, which are frequently either wholly unsaleable or saleable only at a price representing a small proportion of the face value. Therefore the imposition of the tax leaves the solvency of the tax-payer at the mercy of the commission.

RELIEF FOR PROSPECTORS.

It is pointed out, however, that if a promising field is discovered scores of leases change hands, the transactions often involving large profits to speculators or brokers, or other company promoters, who cannot be regarded as having done anything entitling them to special consideration. It is therefore suggested that if relief from income taxation is to be granted to the finder of promising mines or "fields" that relief should be founded upon the view that the work and skill of a prospector is so valuable to the community that it should be rewarded by granting him exemption, wholly or in part, from taxation of his profits.

Asserting that it is undoubtedly an injustice that the whole of the proceeds of a discovery should be taxed at a high rate in the year of success, and that no allowance should be made for years of unrequited toil, the commission recommends the adoption of the averaging system for prospectors, on the same lines as the scheme recommended for primary producers.

In regard to bonus shares, it is recommended that on the ground that bonus shares are capital, and that the issue of those shares affects neither the proportionate interest of the shareholder in the company nor his taxable capacity, bonus shares should not be treated as liable to income-tax in the hands of the shareholder.

BOARD OF APPEAL.

One of the few recommendations subscribed to by all commissioners relates to the constitution of a board of appeal to deal with cases in which tax-payers dissent from rulings by the commissioner. The report declares that, with the present heavy burden of direct taxation, it is imperative that some action be taken to allay existing discontent by giving tax-payers access to an independent tribunal, with a simple and inexpensive procedure. It is recommended that only one board should be constituted at present and that it should consist of three persons, with a fixed tenure of five or seven years, one of whom should have knowledge of law, one of general commercial experience, and one experienced in accountancy.

With reference to the double income-tax, the report recommends :—

1. That in respect of income taxed both in the United Kingdom and the Commonwealth, in all cases where the deduction at present allowed from the United Kingdom tax is not in itself sufficient to insure the payment only of an amount equivalent to the higher of the two taxes, the Commonwealth Government should grant such further relief to the tax-payer as will effect that end.

2. That, consequent upon the adoption of the recommendation, the Commonwealth and State Governments should mutually agree on the question of proportional deductions from their respective taxes in all cases where complete relief from double taxation is not entirely secured by the deductions under British law.

Japanese Agricultural Industry.

The agricultural industry of Japan has its own characteristics, its system being quite different from that of other countries, states the "Yokohama Chamber of Commerce Journal." A Report recently prepared by the Japanese Government in connection with the Geneva International Labour Conference points out certain fundamental features of the country's agricultural economy, of which the following is a summary :—

The area of farm land in Japan, the Report states, represents only 15·6 per cent of the whole area of the country; 52 per cent of the whole population of the country live by farming. The number of agricultural families in Japan is 5,561,000, which includes 29,584,000 men and women.

Rice growing has for many centuries been the leading department of the country's agriculture; animal husbandry is comparatively new, and its combination with general farming is rare. Rice farmers, however, usually practise sericulture and other subsidiary employments in conjunction with their main occupation.

Another characteristic of Japanese farming is the minute division of land under cultivation. In the Kwansai districts one or two chobu is the limit of single ownership. In the north-eastern provinces land under a single owner is larger, but it ranges between two to three chobu. This is stated by the official report to be a result of concentration on rice cultivation. Compared with France, Belgium, or Switzerland, where agricultural enterprises are carried on intensively, the ratio of population to land is higher in Japan, the fact being one of the salient features of Japan's farming industry.

The Report states that of the whole number of landowners 49 per cent are owners whose land does not exceed five tsubo. Of the remainder, 42 per cent are owners of land ranging between five tanbu and three chobu. Owners of ten or more chobu number less than 1 per cent. Of all agricultural families however, 28 per cent do not own their land, being purely tenant farmers. More than 40 per cent are small leaseholders. Farmers who cultivate their own land number only 32 per cent of the total and the percentage is steadily declining.

Although the Japanese use intensive methods their investment in improvements, machinery and other equipment is still very small.

The following table shows the average of the last five years' agricultural production :—

Production Koku.		Production. Kwamme.	
Rice ..	56,890,459	Pears ..	26,390,495
Barley ...	9,431,613	Apples ..	7,826,295
Wheat ..	6,139,647	Kin.	
Soya beans .	3,708,849	Tea ..	63,781,775
Red or white beans	881,743	Sugar ..	163,154,167
Millet ..	1,997,748	Number	
Buckwheat .	1,069,791	Cattle ..	202,862
Kwamme.		Horses ..	114,388
Sweet potato	1,053,259,009	Swine ..	283,184
Potato ...	338,492,320	Fowls ..	11,018,88
Tobacco leaves	12,242,747	Sericultural	
Matting grass	10,341,615	Products	
Oranges ..	65,646,408	Koku	
Persimmons	41,416,548	Cocoons ..	5,220,892
		Pierced cocoons	592,510

Japan's Mineral Industries.

Great results are expected from a new invention for making pig-iron from iron sand, which has recently been patented by a Japanese scientist, states the recent Report on the Commercial, Industrial, and Financial Situation in Japan and Her Dependencies in 1920 and up to 30th June, 1921 (H. M. Stationery Office, price 2s. net). The laboratory experiments are said to have satisfied the authorities, and it is stated that work on a commercial scale will be commenced shortly. It is estimated that from this iron sand, of which there are enormous deposits, pig-iron can be produced at a cost of 30 yen per ton.

The following table of imports in 1919, 1920, and the first six months of 1921, will be found of interest :

	1919	1920	1921
	tons	tons	Jan.-June. tons
Iron ore ..	610,000	650,000	258,000
Pig iron ..	280,000	342,000	96,000
Bars, angles, etc. ..	190,000	292,000	102,000
Plates and sheets not coated with metals	235,000	371,000	134,000
Galvanized sheets ..	5,000	25,000	10,000
Tin plates ..	37,000	48,000	23,000
Pipes and tubes ..	30,000	40,000	22,000
Galvanized wire ..	24,000	26,000	14,000
Iron-nails ..	16,000	23,000	9,000
Rails ..	119,000	113,000	36,000
Scrap iron ..	45,000	39,000	6,000

COPPER EXPORTS AND IMPORTS.

The situation with regard to copper has been remarkable. Before the war Japan was a regular exporter of copper, and imports of this metal were unheard of. In 1919 and 1920, however, large imports, amounting to 26,000,000 yen and 22,000,000 yen respectively, came into the country, and exports, which had been as high as 51,000,000 yen in 1918, fell to 13,000,000 yen in 1920. The import was entirely speculative, and as prices dropped very heavily large losses were incurred. During 1920 domestic production amounted to 65,000 tons, imports to 22,500 tons, exports to 5,000 tons, and consumption to 82,000 tons, but consumption, which was at nearly 8,000 tons monthly in May and June, dropped to 5,000 in December. Stocks, which were 26,000 tons

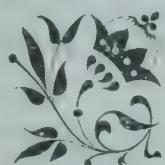
at the beginning of 1920, had increased slightly by December. At present the domestic demand is calculated to be about 5,700 tons monthly and export to China 1,200 tons, making a total of 6,900 tons, against a monthly output of 4,500 tons. This would mean a shortage of about 2,400 tons a month and would gradually diminish the existing stocks, which are now estimated at about 20,000 tons.

When prices were falling last year a syndicate consisting of four of the principal suppliers, Furukawa, Kuhara, Fujita, and Sumitomo, was formed for the purpose of maintaining prices, and Government aid was sought but not obtained. This syndicate has now come to an end, but in its place a new combination called the "Wednesday Association," in which Mitsubishi have taken the place of Sumitomo, has been formed with a view to preventing the import of copper.

COAL.

The usual quantity of about 2,000,000 tons was exported in 1920, but the price was much higher than in previous years, and according to the Customs statistics worked out at an average of 21 yen (say, £2 15s.) a ton. For the first six months of this year there has been a falling off in value of 17 per cent. Judging by the high prices that consumers throughout the country had to pay—ordinary household coal of poor quality cost nearly £6 a ton—one would suppose that coalmine owners had had a very prosperous year, but they claim that owing to the big increase in miners' wages and reduced output they have barely been able to pay their way, and it is the middlemen who have made the profit. At present there are large stocks which are depreciating in value, but in spite of the effect on the industries of the country of a high price for coal the owners have formed an association to curtail production in order to maintain prices.

In order to form a catalogue library, the British Commercial Secretary for Morocco wishes British manufacturers, particularly of agricultural machinery and produce-handling plant (wine and olive presses etc.) to send catalogues to him c-o His British Majesty's Agency, Tangier, Morocco.



Topics from Departmental Reports.



Chemical Research in Bombay.

The following particulars are taken from the Annual Report of the Department of Industries, Bombay Presidency, for the year 1920-21 :—

This is probably the most fascinating aspect of industrial development in India at the present time, but in discussing it popular writers are apt to overlook the fact that the object of industry is not merely to make articles but to sell them at a profit. In discussing chemical research and chemical industries there is naturally a tendency to concentrate on the possibility of the chemical operation and to neglect the commercial aspects. The commercial aspects of various chemical industries in India have recently been examined by Dr. H. C. Watson of the Indian Institute of Science and by an ingenious system of awarding points, he has made rough estimates of the commercial prospects in India of each of 33 chemical industries. By his method of calculation an industry for which all commercial factors are good obtains 9 points whereas one for which all factors are very unfavourable obtains 27 points.

Casein.—Reference is made to Dr. Watson's paper because one of the industries of which the possibilities are estimated by him is casein which is the sixth in the order of merit of his list with 14 points, the salt industry heading the list with 11 points. It is interesting to have so much justification for the research work undertaken on casein at Ahmedabad by Dr. Meldrum and Mr. Gangolli. During the year a second bulletin was published dealing specially with the proportion of fat in casein. The circumstances which led to the publication of this bulletin are of interest. The investigators had already arrived at the conclusions that a low fat content was essential to a good casein and that a low fat content in the casein could only be reached by thorough elimination of fat from the separated milk. A sample of the casein prepared at Ahmedabad was sent to the Imperial Institute, London, which reported that the casein was regarded by experts as of good quality and that material equal to the sample would find a ready market in the United Kingdom. Nevertheless, in spite of this approval by experts, and in spite of the fact that the casein had been prepared with special care so as to ensure that it should contain a minimum amount of fat and had been found on analysis in India to contain only 0.24 per cent of fat, the Imperial Institute reported that their analysis of the fat content showed 7.4 per cent. It was at least singular that two analyses should differ so widely and while Dr. Meldrum and Mr. Gangolli admitted that their methods did not give absolute results, they could not believe that they indicated only one-thirtieth of the true value. They were thus led, in the first instance, to investigate methods for determining the amount of fat in casein and the first part of the bulletin deals with methods of analysis. It was a matter, however, of greater importance to decide definitely that casein approved as good could not contain 7 per cent of fat, as the analysis of the Imperial Insti-

tute would mean that fat in casein is under-estimate, not only in Ahmedabad but all over the world. Dr. Meldrum and Mr. Gangolli were therefore induced to investigate the matter thoroughly and were able (1) to indicate the probable source of error in the Imperial Institute analysis, (2) to devise an absolute method for determining fat in casein, and (3) to vindicate the methods which they and chemists in other parts of the world had previously used.

The second part of the bulletin deals with the practical problem of the elimination of fat. The subject has been dealt with at length here in order to illustrate how the improvement of a simple village industry may depend on research work of a high order and how there may arise out of the apparently simple practical problems of the villagers issues of a purely scientific nature which must be settled before a sound solution of the practical problems is assured.

Castor oil.—Work was also done by Mr. Gangolli on the treatment of castor oil. Simple methods were devised for reducing the acidity of this oil and the results on the small scale have been quite satisfactory. What is now needed is a trial of the method on the "semi-large scale" with the use of a centrifugal separator to clarify the oil. The vegetable oil industry is important at Ahmedabad and has been encouraged in order to make use of the services of the chemical staff by charging low fees meantime for analytical work. The remaining work was routine analysis.

Bitterns.—The principal research work of Messrs. Turner and Koppikar was again concerned with the development of the bitterns industry at Kharaghoda. The bitterns are the mother liquors left after the extraction of common salt from the brines which occur in this locality. The magnesium chloride produced locally, though perfectly white in the crystal, shows signs of discolouration when the crystals are fused preparatory to filling the drums in which the chemical is placed on the market. As the imported article is generally fairly white its superior appearance gives it a corresponding hold in the mill industry. Mr. Koppikar conducted a number of experiments on large scale batches of material at the factory itself. The results varied. Although in some cases a translucent salt was obtained the results could not be repeated with certainty. Laboratory experiments are now being conducted in Bombay to determine the correct working temperature for the final stage. Except for the colour the quality is quite satisfactory. The manufacturing company added during the year to its equipment a motor wagon for conveying the bitterns from the salt pans to the company's factory. It is also making efforts to sell its output in foreign markets, and a concession as regards royalty has been submitted for the consideration of Government.

The production of epsom salts received further, but owing to lack of suitable apparatus, inadequate attention. The earliest experiments were directed towards recovering epsom salts from the sludge left after the extraction of the magnesium chloride from

the bitters, but it seems probable that a better line of attack will be to extract the epsom salts from the bitters first and afterwards to recover the magnesium chloride from the residue. The experiments had to be suspended till suitable apparatus, now on order, is received. Experiments were made on extracting epsom salts from hard sludge. Experiments on a "semi-large" scale were successful; commercial production has not yet been considered.

The bitters of Kharaghoda offer great opportunities for scientific research as well as prospects of economic development. In order to check the results obtained in India a large range of samples of brines, bitters, salts and sludges were sent last year for independent analyses to the Government Laboratory, London. The report of the Government chemist stated that "all the samples" (of magnesium chloride) "may be considered good commercial magnesium chloride (full hydrated)."

The Chemical Services Committee last year drew attention to the fact that little or nothing is known regarding the vast salt deposits of the Runn and that a thorough investigation of the area by a staff of skilled chemists is necessary to determine its industrial importance. Referring to this recommendation the Department of Scientific and Industrial Research has suggested that, pending action on it, tests upon a "semi-large scale" should immediately be put in hand in order that more exact information may be available when it is found possible to proceed further with the question.

There the matter rests for the present. As the royalties paid on the bitters for the manufacture of magnesium chloride (as well as the income-tax paid by the company working them) are taken by the Imperial Government further expenditure can hardly be incurred by the Government of Bombay at the present time. But the work done so far by the Department of Industries has been justified both by the commercial success of the Pioneer Magnesia Company and by the suggestions for continued research by the Chemical Services Committee and the Department of Scientific and Industrial Research, London.

The miscellaneous work of Messrs. Turner and Koppikar consisted chiefly of analyses of minerals from Salsette undertaken at the instance of the Geological Survey. A complete collection of the lime-stones of the Presidency was also made. These are now under analysis.

Trona.—The results of a survey of the alkali deposits in Sind were given in the annual report of 1919-20. Experiments were subsequently made locally for improving the production of *chaniho* (crude sodium carbonate). The object of the experiments was not precisely understood at first, as the local authorities aimed at producing a pure sodium carbonate. It was pointed out that all that could be obtained by the methods suggested was a fairly pure form of the mineral "trona" which is a combination of the carbonate and bicarbonate. This is itself a valuable commercial product worth producing and is the same as the crude soda of Lake Magadi.

Standardization of Weights and Measures.

The Government of India have passed orders on the report of the Committee which was appointed in October, 1913, and which submitted its report in July, 1914, on the question of the feasibility of introducing

uniform weights and measures throughout India.

The Government of India, however, refrained during the war from dealing with the question of the standardization of weights and measures, as it was obvious that any radical change of system would entail at any rate a temporary dislocation of trade. A further factor which influenced this decision was the uncertainty whether the United Kingdom would adopt the metric system in its policy of post-war reconstruction; for, if it did, the arguments in the Minority Report in favour of the adoption of that system in India would have been strongly reinforced. The Report of Lord Balfour of Burleigh's Committee on commercial and industrial policy after the war makes it clear that any alteration to the standards of the United Kingdom is highly improbable at any rate for sometime to come. The Government of India therefore consider that they are now in a position to dispose of the recommendations made by the Weights and Measures Committee with a reasonable prospect of finality.

The Government of India think it necessary at the outset to make a clear distinction between weights and measures from the point of view of the need for standardization. Measures of capacity, especially dry measures, vary enormously from province to province and even from district to district. They are, however, used merely in retail trade, and the replies of the Local Governments and Administrations show with singular unanimity that discrepancies in measures of capacity do not cause so much practical inconvenience as discrepancies in weights, while their influence on inter-provincial and foreign trade is practically negligible. Subject to the restriction imposed by Section 80-A (3) (f) of the Government of India Act, read with item 29 of Part II of the first Schedule to the Devolution Rules, the Government of India, therefore, propose to leave this question at any rate for the present entirely to Local Governments who may take such action as they may think advisable to standardize dry and liquid measures of capacity within their provinces.

Similarly, it is not proposed to adopt all-India standards of length or area. On general grounds the Government of India consider the English measures of length and area the most prevalent and therefore the most suitable. These are the foot, yard, chain, furlong, mile and acre, the chain being divided into 100 links for land measurement. At the same time, they recognize that the use of other measures can cause no serious inconvenience from the commercial standpoint, while Local Governments are intimately concerned inasmuch as any change in these measures might cause great inconvenience in its effect on revenue records. Subject again to the restriction mentioned in the concluding sentence of paragraph 3, Local Governments will, therefore, be left a free hand to deal with this matter if and as they choose.

As regards weights, the Committee discussed three standards, (1) the Indian Railway standard, (2) the British standard based on a new *seer* exactly equal to 2 lbs., and (3) the metric system. They decided, by majority, in favour of the Railway standard of one maund=40 seers and one seer=80 tolas or 16 chataks. This standard has undoubtedly many arguments in its favour. It has a definite and convenient base in the tola of 180 grains, a weight which is universal throughout the country in the form of the rupee. It lends itself to multiple halving, and since it is in use on every railway, it is

known throughout the country. Local Governments, who have been consulted are almost unanimous in their support of the majority finding of the Committee, and the Government of India have decided after careful consideration to confirm this decision.

At the same time, the methods of introduction present serious difficulties. Measures of weight differ so radically throughout India that the imposition of any uniform system would necessarily entail a complete alteration in the standards prevailing throughout the greater part of the country whatever the standards adopted might be. In order to make the change effective, therefore, it would be necessary firstly to pronounce illegal from some future specified dates the possession and use of weights varying from the standard ; secondly to enforce this pronouncement by definite penalties ; and thirdly to ensure the substitution throughout India of standard weights for local varieties. The difficulties attending such legislation were recognized by the Committee. The Government of India fully appreciate them, and would be exceedingly loath to create by statute a new offence, specially an offence involving no moral obliquity in the minds of the people. The expense of prompt and general distribution of standard weights would also be very great.

The Government of India, therefore, accept the Resolution adopted by the Council of State on the 23rd September in the following terms :—

"This Council recommends to the Governor-General in Council that the Government of India should declare themselves in favour of the ultimate adoption in India, excluding Burma, of a uniform system of weights based on the scale now in use on the Railways."

The Government of India are not prepared to allow the intrinsic merits of the Railway system to weigh against the strong general arguments against compulsion, and they have, therefore, decided to limit their action first, to indicating a preference for the Railway system of weights, and second to maintaining standard weights at the chief Presidency towns. As regards Burma, they have no preference to indicate since it is clear that Burma requires special treatment.

The subject of weights and measures is now provincial, with the reservation that the Government of India shall legislate as regards standards. The only Act regarding standardization is the Indian Weights and Measures of Capacity Act (XXXI of 1871), but this Act has in practice no operative effect because none of the notifications prescribed by the various sections of the Act have yet been issued. It is based on the continental metric system, the *seer* being defined as equal to the kilogramme. The Government of India do not propose to repeal this Act nor to introduce at present any new measures prescribing all India measures of weight or capacity. Their opinion is that Local Governments, in exercise of the power conferred upon them by the Devolution Rules, should take such executive action as they can to educate public opinion in favour of the standard maund and *seer*, by publicity work, by adoption in school curricula, and by any other suitable measures. Municipal bodies might be encouraged to frame bye-laws adopting this standard, and Local Governments might maintain standard weights at their respective capitals and at important trade centres. Where a Local Government considers that provincial standardization by law is feasible the Government of India will have no *a priori* objection to such legislation, on the usual understanding that they will be consulted as to the actual form

which such proposed provincial legislation is to take. If, subsequently, opinion develops strongly in favour of imperial standardization of weights, the Government of India will be prepared to undertake such legislation, but at present they consider that any such step would be premature.

With regard to Burma, the Government of Burma have generally accepted the recommendations of the Committee summarised in Chapter VII of their Report, except in respect of measures of dry capacity, and have submitted proposals for legislation with a view to giving effect to them. The Government of India in approving these proposals have suggested that the necessary legislation might be postponed until the Reformed Legislature comes to existence in that province.

The Training of Apprentices.

Following on the publication of their first report in March of last year, the Committee on Engineering Training appointed by the Council of the Institution of Engineers and Shipbuilders in Scotland have now issued their second report.

The first report dealt more particularly with questions relating to the rank and file of the engineering industry—at least 80 per cent of the total number employed—most of whom had left school at the age of 14 with a general education not beyond the stage of the intermediate certificate of the Scottish Education Department. The second report deals with questions relating to the education and training of lads who leave school between the ages of 16 and 18, and who, in most cases, have reached the standard of the higher leaving certificate.

In the opinion of the Committee the present curriculum of the elementary school provides a sound general education for boys intending to enter the engineering trade. Special attention, however, should be paid to mathematics, elementary science, solid geometry, and some form of manual training. There are, however, many boys for whom a general education on these lines would prove too theoretical, and at times beyond their capacity. For such boys a distinct and definite course of school training along practical and manual lines is recommended. Such a division of boys into two groups, it is claimed, would benefit the more studious by relieving them of the company of those who could not keep up with them, and the less studious by providing them with work better suited to their interest and capacity. The decision as to which course each boy should follow would have to be made about the age of 12 years, in accordance with the class teacher's report, supported by examination or other suitable test.

The committee recommend that boys who show an aptitude for higher study, especially in mathematics, should be encouraged to go forward for the higher leaving certificate. They consider that the present course of instruction in secondary schools is satisfactory for boys intending to take up engineering, provided that science and solid geometry be carried to a more advanced stage than at present. These boys should also be granted facilities for visiting engineering works, in order that their interest in practical work may be stimulated. The teaching of engineering subjects in the school, however, is not recommended.

SANDWICH SYSTEM.

The committee think that the "sandwich system," under which apprentices spend the summer in the workshop and the winter at college should be encouraged in the case of apprentices who are able to take

advantage of the higher training it offers. Those who train on this system should spend at least three and a half years in the workshop before receiving their "lines." The committee strongly recommend the advantages of this system of combined theoretical and practical training as providing a young man with the best means of preparing himself for higher work in the engineering industry.

It is recommended that, where possible, not less than one year and not more than two should be spent in the workshop before proceeding to college. During the first period of workshop training attendance at evening classes in preparation for the day classes is very important as a means of maintaining the habits of study of the apprentice.

It is considered that the work to be covered by the student who graduates in engineering has gradually increased until it is only the exceptionally well-prepared student who can overtake it in three years. It is thought advisable, therefore, that the course of study leading to graduation should be a four-year course.

WORKSHOP TRAINING.

The workshop training to be given to apprentices in engineering who have taken their higher leaving certificate before leaving school necessarily offers a problem differing in many details from the training of boys who leave school at an earlier age and at a less advanced stage in their education. But the committee are strongly of opinion that these older lads should enter the workshop under the same general conditions and should be subject to the same discipline as the boys of what may be termed the rank and file. The workshop training will differ, perhaps, in detail. "The fact that the college apprentices spend two or three distinct periods of six months in consecutive summers in the works makes it more practicable to provide them with short courses of special training in the foundry, drawing office, laboratory, or testing department, &c., which would be outside the experience usually included in the training of whole-time apprentices."

The committee draw attention to one aspect of the general question of the workshop training of apprentices, which has been neglected by most employers in this country—that is, specific instruction in manual work. It is pointed out that such instructions as apprentices at present receive is usually left to the journeyman with whom they work or who happens to be working on neighbouring machines or benches. It will be good if the man is interested in teaching boys and has some talent for such a duty, and poor if the man is not interested, cannot impart his experience, or, as sometimes happens, has a jealous dislike of handing on his craft knowledge. The Committee therefore recommend that specific courses of instruction in manual operations should be organized for apprentices, under the guidance of a trained mechanic chosen for his ability to impart his knowledge of workshop methods.

INDUSTRIAL ORGANIZATION.

The committee are also of opinion that the time is now ripe for the provision of courses of instruction in industrial organization, the need for which has recently forced itself upon the attention of engineers. Classes in works organization, modern production methods, time study, psychology, and methods of instruction should, therefore, be provided at one or more of the colleges, and young men who wish to qualify for promotion to posts of foremen, inspectors, rate fixers, planners, controllers, &c., should be encouraged to take up the systematic study of these

subjects. It is held, however, that such classes, which would form a valuable aid to the undertaking of responsible executive duties, should not be entered upon until the more technical studies have been completed, but before the habit of systematic study has been lost by disuse.

SCHOOL AND WORKS SPORTS.

It is pointed out that lads who are attending college may be placed at a disadvantage in comparison with those who go to work at an earlier age, through not having the same opportunity for developing that robustness of character which workshop training affords. The committee, therefore, recommend that the need for organized sports should be kept prominently before such lads. Every effort should be made to secure that college lads should take part as much as possible with the other apprentices in organized works sports, so that the benefit of common effort on the playing field may be enjoyed by all apprentices in the industry without distinction of age, education, or training.

Mica in Brazil.

According to the Report on the Economic and Financial Conditions in Brazil to October, 1921, Brazil is one of the few suppliers of muscovite mica outside of India and the United States.

It produces excellent sheet mica and the figures given below would suggest that it is developing in importance to a considerable extent in this connection. It appears that in pre-war years the poor transportation from the Brazilian deposits greatly handicapped their development. Thus in 1912 the mica was worth only one-eighth to one-twelfth as much in the Sao Paulo market as when delivered in England. Probably increased costs of working in India and elsewhere had made the Brazilian handicap relatively smaller than before the war; while increased prices for the material is also a favourable factor in Brazil.

The exports from Brazil from 1915 to 1920 (from Brazilian official statistics) are given below:—

	Weight in kilos.	Equivalent value in £ sterling
1915	50,773	7,306
1916	53,743	11,193
1917	96,627	27,200
1918	161,623	59,017
1919	154,350	76,804
1920	68,133	35,505

The following figures relate to the exportation of mica (malacacheta, as it is commonly termed in Brazil) from the Port of Santos:—

	Quantity in kilos.	Value f.o.b. Santos. Milreis.
1908	3,335	1,570
1909	749	1,300
1910	146	2,100
1911	2,604	2,000
1912	6,672	6,650
1913	2,600	3,000
1914	400	800
1915	19,185	22,250
1916	7,574	13,220
1917	10,571	63,664
1918	11,604	57,240

The mineral is found in various districts in the interior. Several deposits are worked in Minas Geraes in the district of Santa Maria de Sao Felix (Municipality of Pecanha). This region should eventually be served by the Victoria to Minas Railway. The mineral from this district is sent to Riode Janeiro. In Sao Paulo mica is found in great quantities (and of good quality) in Iguape, Itapeceria, and in the Serra do Mar (the range running parallel to the sea) principally in the Municipality of Parahybuna.

Light Railways and Tramways for India.

The Report of the Indian Sugar Committee says :—

"We need hardly point out that with a commodity like sugar-cane, the deterioration of which sets in early and proceeds rapidly, promptitude in delivery is a fundamental necessity. Pick-up stations should, therefore, be provided at as many convenient points as possible, and every effort should be made to comply punctually with requisitions for trucks. It is equally important that the trucks provided should be properly adapted for the carrying of cane. We understand that, no doubt owing to the exigencies of the war, covered steel wagons have frequently been used to carry cane in recent years. Not only are such wagons inconvenient for the loading and unloading of cane, but the high temperatures, which are generated in them, particularly as the cane harvesting season advances, directly hasten the fermentation of the juice. Open trucks with low sides are best suited for employment on this traffic.

An alternative to the public railways as a means of transport which is largely resorted to in Java, Cuba and other sugar-producing countries, is the system of light railways or tramways privately owned by the central factory. It is natural that this system should find its greatest scope where sugar is grown on large estates which alike secure the concentration essential to economic working and reduce or eliminate the necessity for acquiring rights of property or of way over the lands of others. In the undeveloped tracts of India, where large grants for sugar cultivation and manufacture are still available, it is obvious that a network of light-track railways will equally be required; but even outside these special areas we think that there already exists, and will as the industry develops, exist to an increasing degree, an opening for the use of light railways and tramways to convey cane from the field to the factory. Much will depend on the success which attends the various measures proposed with a view to the concentration of the areas of supply, but the provision of means of transport which will relieve the cane-grower of the trouble of carting his crop to the factory will itself tend to promote concentration. Whether it will be practicable to combine with the quasi-permanent main tracks, temporary and easily movable feeder-lines right up to the cane-fields along which the trucks would, as in Java, be man-handled or drawn by bullocks to the main system, is a question which only detailed experience of each locality can decide. Outside private estates, however, there is no doubt that the main tracks for such systems will usually have to be laid along the berms of the public roads, and we trust that the provincial and district authorities will so far recognize their obligations to co-operate in promoting the local production of sugar as to accord a sympathetic hearing to such proposals. We would include also the railway authorities in this appeal. An instance was brought to our notice in

Southern India in which the efforts of a sugar factory to develop a light railway system were impeded by the refusal of a public railway to allow a level crossing to be laid across its own line; and while we realize that the safety of the travelling public must remain the paramount consideration, we cannot but feel that efficient safeguards might have been devised which would have enabled the factory's scheme to be carried through without essential security being jeopardized, more particularly as railways are already familiar with the measures necessary for the control of road traffic in similar circumstances.

Research Work at Calcutta.

According to the Report of the Department of Industries, Bengal, for the year ending the 31st December, 1921, industrial research work was seriously hampered by the absence of an expert staff.

The Calcutta Research Tannery, however, made considerable progress in its work. It carried on investigations both into raw materials and into tanning methods. A systematic analysis of leathers tanned at the Research Tannery was made with a view to improving its quality. An analytical survey of the water used in various tanneries throughout India was also carried out in order to compare their technical properties. Investigations into the manufacture of sole leather of superior quality from local buffalo hides and tan stuffs were carried on and definite results have been obtained. The leathers turned out have been recognized by the local trade as of good quality, and they fetched satisfactory prices at the auctions by which they were disposed of. To disseminate modern scientific processes of tanning among the village chamars demonstrations were arranged in various industrial exhibitions, and pamphlets on the subject were distributed. An important development was the appointment of apprentices to receive a training in the Research Tannery. One apprentice who has already finished his training has obtained an appointment as an assistant in a tannery near Calcutta. Much attention has been given to the subject of weaving. The weaving expert, who had previously worked under the charge of the Director of Agriculture, was transferred to the administrative control of the Director of Industries from the 1st December, 1919. Owing to the demand from all parts of Bengal for the revival of the hand spinning of cotton with a view to its adoption as a cottage industry, special attention was given to the introduction of improved *charkas* and to the demonstration of the manipulatory processes amongst the spinners. The attention of the Department has also been devoted to the introduction of improved hand-loom add weaving machinery. Improvements have been made in the fly-shuttle slay, the fly-shuttle loom and the pit loom. These improvements have been widely demonstrated throughout the province and have met with an encouraging reception. The transfer of the control of technical and industrial education from the Director of Public Instruction to the Department of Industries was effected towards the end of 1920. Up to the present, the Director of Public Instruction has retained control of the Bengal Engineering College, Sibpur, and of the Asanulla School of Engineering, Dacca; but all other technical and industrial institutions in the province have been placed under the Director of Industries, and the transfer of these

two institutions to his charge is now under the consideration of Government. An important development was the appointment of a strong committee under the presidency of Sir Rajendra Nath Mookerjee, K.C.I.E., to consider the establishment of a fully equipped technical school in Calcutta with the object of giving adequate theoretical instruction to the apprentices employed in the engineering works in and around Calcutta. The committee worked out a scheme, chose a site and approved of the plans for a building. The site which is centrally situated in Corporation Street has been acquired, and building operations will commence as soon as funds are available. The scheme for improving the training of apprentices in the Railway workshop at Kanchrapara made some progress during the year. A hostel for Indian apprentices and a house for one of the teachers have been almost completed. In this case also the complete introduction of the scheme must depend upon the financial resources available. The improvement of mining education in the coal-fields has been under discussion for a long time. It was originally proposed that the cost of the scheme should be shared between this Government, the Government of Bihar and Orissa and the mining industry. The Government of Bengal have now decided to proceed with the portion of the scheme affecting this province. The mining interests have agreed to contribute to the cost of the scheme, and the balance will be borne by this Government. The popularity of the Government Weaving Institute at Serampore continued during the year under report, and a large number of applications for admission had to be rejected.

Railways in India.

The following is a brief summary of the Administration Report on Railways in India for the year 1920-21, which has just been published :—

During the year only 298 miles of new lines were added, bringing total mileage open on March 31, 1921, up to 37,029. New constructions had been retarded for financial reasons and, owing to shortage in supply of materials, of the 298 miles more than half the length is represented by military railways and the balance is made up by a few short branches, financed mostly by the Indian States and branch line companies.

Progress on lines under construction has been slow. Immediate prospects of further progress in new construction are very limited. Preliminary measures in the way of surveys and estimates have, however, been completed for a great number of projects in different provinces and work in this respect has been continued, so that everything may be ready for the resumption of the work of extensions as soon as the present difficulties disappear.

PROJECTED LINES.

The following important lines were under survey during the year :—Hukong Valley route of the Indo-Burma Connection Railway, Manoharpur Coalfields Railway, Mirzapur-Maihar and Daltonganj-Hutar Coalfields Railway tube railways in Calcutta, Karad-Chiplun-Ulva Railway, Hardwar-Kamprayag Railway and Agra-Karachi Connection Railway.

CAPITAL EXPENDITURE.

The capital expenditure from Government resources during the year has been 24 crores 8 lakhs. Although fairly generous expenditure has been found possible, unfortunately it did not suffice to make up in any appreciable degree the leeway incurred during the war. Moreover, the figure by itself is

rather apt to mislead unless allowance is made for the rise of prices, which has reduced the effective value of money in some cases to less than half.

OPEN LINE FACILITIES.

Referring to open line facilities, the report observes that public criticism of railway shortcomings in recent years has been directed principally against the shortage of rolling stock. It is assumed by the public that, given an unlimited supply of wagons, the trouble in respect of transport would disappear immediately. But, unfortunately, the solution of the question depended on other factors. Railways cannot handle unlimited stock without adequate facilities, such as yards, sidings, double lines, extended repair shops, etc. To provide unlimited stock before these facilities would produce confusion and a superfluity of idle stock. The work of bringing railways up to the necessary standard in this respect is a question, therefore, of time and the expenditure of large sums of money. Touching the question of rolling stock, the report observes that the railways have certainly not stood still in the matter of supply of stock.

The complaints of the public indicate that needs have increased faster than stock, combined with capacity to handle. Moreover, because India is so far incapable of meeting her requirements, to any appreciable extent, in the matter of engines, wagons, wheels, axles and, because of the uncertainty of English supplies, no railways in India have been able to work up to even the programme of output for which funds have been provided.

But there was also a financial aspect. Before the war, a broad gauge superheater engine cost in England £3,910. In January, 1919, the price of a similar engine was £8,300; in the current year it was in neighbourhood of £11,000. It was obvious, therefore, that the purchasing power of money in respect of stock had fallen to about one-third that of the pre-war standard, and to produce the same result, grants must be trebled. Simultaneously with this, the rate of interest on borrowed capital had risen to nearly double.

The wagon supply of all lines was pooled during the year. Restrictions on loading of foreign wagons in coal-fields were removed and the result was that there was a 25 per cent increase in the capacity of despatch from coal-fields. The necessity of providing for the urgent demand for coal in different parts of the country has, in effect, led to the diversion of wagon supply to the coal areas.

EARNINGS.

The total gross earnings of all railways were Rs. 91,98,76,000, representing an increase of Rs. 2,83,44,000 over the previous year. The result attained fell short of budget anticipations owing to the trade depression. There had been a phenomenal growth of passenger traffic, and the distribution of the number carried, by classes, is interesting. The number of third class passengers during the year was over forty-nine crores, intermediate over one crore, second classes seventy lakhs and first class eleven lakhs. Earnings from the different classes were over twenty-eight crores from third class and over two crores from second and over one crore from first. Dealing with the increase from second class fares, the report says that India alone in the world had escaped an extensive rise in rates and, if the railways were to be run on sound business principles, an increase commensurate with the increased cost of working could not be avoided.

It is pointed out that as a result of increases in

working expenses and the rise in interest on borrowed capital, the working profit has been brought to a figure lower than what it stood at in 1912-13.

STORES.

The value of stores purchased through direct import was above sixteen crores, that of imported stores purchased in India was above five crores and that of indigenous origin was over nine crores. The Government hopes that, both in the interest of India generally and that of the railway management in particular, further industries on similar lines to the Tata Steel and Iron Company will be started in the country and that, within the next few years, India will be able to record appreciable progress towards making herself self-supporting in respect of material for her railways, which is at present largely imported from abroad.

Concluding, the report refers to the Acworth Committee's report and hopes that the facts given in the administration report would be useful in coming to conclusions regarding the recommendations of the Railway Committee. "India is on the eve of great changes, economic as well as political. Important schemes of manufacture and mining and other developments are being initiated, the progress of which depends, in almost every case, on adequate transportation facilities. It is, therefore, in the first degree important that any change which is now made shall be wisely conceived and carefully considered before it is adopted, so that we may effect a real and lasting improvement in the management of our railways, on which the prosperity of the country so greatly depends."

Standardization of Electrical Practice, Systems and Pressure of Supply.

The following Press Communique, dated Fort St. George, the 17th March 1922 has been issued by the Madras P. W. D.—

The attention of all persons concerned is invited to the desirability of adopting standard systems and voltages of electrical plant.

2. In the Madras Presidency at the present time there are five different systems and no less than seventeen different voltages of electric supply. The effects of so many different systems and voltages are many and react seriously against the cheap and ready use of electricity.

3. Electric lamps are required in fourteen different voltages and if it be remembered that each lamp is required in not less than half a dozen different candle powers stock requirements become so very numerous that in practice no one stockist attempts to keep all varieties in stock. If voltage standardization upon a very few values could be brought about a great benefit would accrue to the electrical industry; all apparatus which has to be closely selected for voltage, such as lamps, heating utensils, etc., could be manufactured and distributed with less cost and greater rapidity and the saving would eventually react to the benefit of the consumer. Stockists of electrical supplies could for the same investment in stocks carry more kinds and sizes of electrical apparatus where now they have to carry lines of apparatus of slightly different voltage.

4. The industrial requirements in electric plant and control gear also are similarly and seriously handicapped by the many systems and voltages. Not infrequently appliances intended for one particular system or voltage are used on a different system or voltage but only at a reduced output or life which is neither efficient nor economical.

5. The remedy clearly lies in the standardization of systems and voltages of supply to as few as possible. This matter has been very carefully considered by the British Engineering Standards Association and by the International Electro-Technical Commission and the Government of India are anxious to educate users of electricity on this point.

6. The following systems and voltages of supply are published for information of all persons concerned and recommended for general adoption:—

(a) In view of the prospects of hydro-electric supply in the Madras Presidency and the fact that industrial load can in most cases be dealt with only by alternating current distribution, it is recommended that alternating current systems be selected for all hydro-electric schemes in preference to continuous current; in special cases, however, such as residential areas there may be good reasons to prefer continuous current.

(b) The standard frequency of 50 cycles, with a secondary standard frequency of 25 cycles for special cases such as electric traction, shall be adopted in all Alternating Current schemes.

(c) The standard pressures of all electric supply schemes and plant shall be one of the following:—

(i) *Standard low pressures (C. C. or A. C.).*—At the generator: 60, 115, 230, 460 and (for electric traction) 525 volts.

(ii) At consumers' terminals: 55, 110, 220, 440 and (for electric traction, 500 volts also a secondary standard in three phase circuits of 400 volts between phases, giving 230 volts between any phase and neutral.

(iii) *Standard high pressures (A. C.).*—At generator terminals: 2,200, 3,300, 6,600 and 11,000.

(iv) *Standard primary pressures for A. C. transformers.*—Measured at primary terminals: 2,000, 3,000, 6,000 and 10,000.

(v) *Standard secondary pressures for A. C. transformers.*—Measured at the secondary terminals: 115, 230, 460 and (525) at no load.

(vi) *Standard C. C. pressure for tramways.*—Measured at motor 500 volts.

Sugar Cultivation in Malaya.

In his Report for 1920 the Director of Agriculture in British Malaya refers to the efforts that are being made to encourage the cultivation of sugar cane in the Malay Peninsula.

With the high prices ruling for sugar, the question of reviving the industry has received a certain amount of attention during the period under review, and applications have been made for large areas of land for the purpose of taking up the cultivation of sugar as a sole crop. A committee was formed to investigate the matter and report to Government as to the advisability of granting facilities for the cultivation of sugar, with a view of re-establishing the industry on a permanent basis. With the help of the Agricultural Inspection Division a collection was made for local sugar canes from the different districts throughout the Federated Malay States and Straits Settlements, and these were planted at the Experimental Plantation at Kuala Lumpur. An effort was also made to introduce the best types of canes which are now being grown in all the more important sugar growing countries in the tropics, and the planting materials were expected to arrive early in 1921. Land is being offered at special terms for sugar cane cultivation, and suitable areas are being reserved.

Apart altogether from the question of encouraging the cultivation of sugar for export, there would appear to be reason for believing that a good market could

be found for locally-grown sugar, provided facilities existed for refining the crop. The statistics for 1919 of the Straits Settlements show that 97,340 tons of sugar, valued at £3,815,976, were imported into the Colony, mostly from Java and other parts of the Dutch East Indies. Of this quantity 65,988 tons were exported, of which 13,051 tons were sent to the Federated Malay States and the other native States in the Peninsula. The trade statistics of the Federated Malay States give the imports of sugar as follows over a period of three years:

	Tons	Value £
1918	8,194 ..	147,781
1919	9,893 ..	383,021
1920	7,379 ..	530,700

National Electro-Technical Committee for India.

The following resolution of the Government of India (Dept. of Industries, dated 12th January 1922) has been issued:—

In the year 1908 an International Electro-technical Commission was formed with its headquarters in London for the purpose of carrying out the following resolution of the Chamber of Government Delegates at the International Electrical Congress of St. Louis in September, 1904:—

“That steps should be taken to secure the co-operation of the technical societies of the world by the appointment of a representative Commission to consider the question of the standardization of the nomenclature and ratings of electrical apparatus and machinery.”

2. Under the Statutes of the Commission each self-governing country desiring to join the Commission is authorized to form an Electro-technical Committee for its own country. The question of constituting a National Committee for India was considered by the Government of India in 1910. It was, however, decided to postpone its organization, as the manufacture of electrical machinery in India was at that time on too small a scale to justify the formation of a Committee. The Government of India have, nevertheless, been represented at the meetings of the Commission and have subscribed regularly to its funds. Although little further progress has yet been made in the actual manufacture of electrical machinery in this country, the Government of India, after consultation with the more important firms interested in electrical matters in India, are of opinion that, in view of the large increase which has taken place in recent years in the sale and use of electrical machinery in this country, the time has now arrived when a local committee should be formed for the purpose of discussing points of interest specially relating to India, of forwarding to the Commission any resolutions which it may frame on the subject and, generally, of performing the functions of a National Committee.

3. According to the Statutes of the International Electro-technical Commission, committees should be formed in each country by technical societies which deal with electrical engineering, either exclusively or in conjunction with other technical subjects, provided that such societies have been in existence for at least three years. In the absence of such technical societies a committee may be appointed by the Government. The Government of India are of opinion that the appointment of a National Committee may in the future most suitably be entrusted to the recently constituted Institution of Engineers (India),

but as it was constituted as recently as the 13th September, 1920 it will not possess the necessary authority until the 13th September, 1923. For the intervening period the Government of India have therefore decided to constitute a National Electro-technical Committee for India under paragraph 3 of the Statutes of the Commission. The following gentlemen will form the first committee:—

(i) A. C. Coubrough, Esq., C.B.E. (of Messrs. Mather and Platt, Limited, Calcutta.)

(ii) A. Cochran, Esq., C.B.E., M.I.C., M.I.N.A., M.I.E. (India), A.M.I.E.S. (of Messrs. Burn and Company, Calcutta.)

(iii) C. D. M. Hindley, Esq., M.A. (Cantab.), Chairman, Port Trust, Calcutta.

4. The Committee will choose its own President and appoint a Secretary and proceed with its work in accordance with the Statutes of the International Electro-technical Commission. The subscription hitherto paid by the Government of India as a subvention to the Commission and towards the cost of its publication will in future be paid by the Committee to which the Government of India will until further orders make an annual grant of £130.

The prophets have again been making our flesh creep. Sir William Beveridge has published some calculations, derived from meteorology and history, to show that we are entering a cyclical series of lean years, and that 1923 in particular may produce a famine such as has not been known since the fourteenth century. The shortage will, we suppose, be complicated by the fact that the populations of the world are now increasingly demanding wheat instead of maize or rye, or rice; and also by the consideration that, in spite of admonitions from Mr. Harold Cox, people still continue to produce children without the slightest guarantee that these will ever be able to earn their living. But after all, we came so near to famine during the war that one cannot take these predictions of disaster too seriously. Another professor has been telling us that Germany is making “synthetic” gold, which would make the Reparations bill look silly. It was a good newspaper story, for, as Professor Soddy told us long ago, the transmutation of metals is an accomplished fact. But what can be done theoretically in the chemical laboratory is not practicable on a wholesale commercial scale, and we are afraid that one of the difficulties about synthetic gold is that it costs more to make than the real article to mine. It must be remembered that the transmuted metal is always of a lower atomic weight than the element from which it derives; e.g., uranium, 238.5, produces radium 226.4. These are, of course, very expensive products, and probably too dear to use for producing gold, whose atomic weight is 197.2—also high in the scale. The intermediate elements are bismuth (208), lead (207.1), mercury (200); these could, at least theoretically, be employed. So if there is sudden shortage of these elements, some newspaper is sure to announce that they are being made into gold. For ourselves, with the profoundest respect for the chemists, we think it is as likely that a British cigar will turn into a Havana by being looked at; if only somebody could discover that process, what a different world it would be!

Negotiations opened sometime ago by the Prague iron works with coke producers in the Ruhr district have not been successful as the German authorities have declined to grant export permits owing to the coke shortage in Germany.

Leaders in Finance and Industries.

CHARACTER SKETCH OF THE MONTH.

Lloyd George.

Mr. Lloyd George is a subject of perennial interest to the psychologist. Mr. R. L. Bridgman thus writes of him in the *Boston Journal of Education* :

By vote of 439 to 43 in the House of Commons on October 31, David Lloyd George was vindicated for his policy toward Ireland. This is his warrant, yes, his command from the people of Great Britain to hold on persistently and unflinchingly with his refusal to entertain any proposition regarding the future of Ireland which implies any weakening of the bonds of empire, but to extend every possible consideration of self-determination inside of that impassable limit. Lloyd George's policy toward Ireland, due to his character as a statesman, reveals that character in phases which the country approves and which his critics condemn.

Having had the benefit of personal contact with a college professor who is Welsh, as Lloyd George is, and who is familiar with the peculiarities of his distinguished countryman, there is a closer touch in that view than in the current impersonal comment of the press. That the prime minister is *bona fide* Welsh all through is seen not only from his representing Carnarvon in Parliament, but in his marriage of a wife from Mynyddednyfed after he had been educated in a church school and privately at Llanystymdwy, and that his present post office address is Brynawelon. What sort of a man is Lloyd George in the eyes of his countrymen who can best appreciate his nature? Admitting his superior ability, following him as the best possible leader in the prolonged national crisis since the outbreak of the World War, yet he does not command that feeling which Lincoln commanded when he was the leader of the United States during its dark and trying hours. Britain backs Lloyd George. Not yet does Britain love him.

A MIXED VERDICT.

If one can get close to the British appreciation of its prime minister, judging from the opportunity offered, it would appear that he is regarded as an opportunist, rather than as a statesman who sees clearly the immutable principles which should guide national policy and stands like a rock for them, whether or not the popular voice is with him or against him. There is a much mixed verdict about the motives of the man. Hostile critics are sure that he is looking out first, last and always for the political salvation of Lloyd George. Decisions of public policies, according to these critics, are determined by their bearing upon the supremacy of the premier in the whirl of events. They are disposed to put him in the same class as a much less distinguished man in public life who was being warned against his possible fate at the hands of the fickle populace, who exclaimed: "I should like to see if they can change any faster than I can." On the other hand, there are numerous facts his friends can quote on the other side to prove that he is consistent and persistent when great issues are at stake.

HIS WONDERFUL UTILITY.

A glance at his career proves immediately, whatever may be the antagonistic opinions about his mo-

tives, his character and his political intelligence, that he is a man of wonderful ability, industry and success. Since 1916 he has been the prime minister and the first lord of the treasury. For these long and turbulent five years, when the fate of the empire and even of civilization has been in a chronic condition of crisis, he has been the hand at the wheel of state. His position may fitly be compared with that of the pilot of a steamer shooting the rapids at Montreal. Whoever has felt the thrill of that threatening run through the boiling torrent, with rocks, hidden or protruding above the waves right and left, with the spray dashing over the decks, the entire craft careening and tossing like a chip on its overmastering flood, will sympathize with the pilot of the British ship of state through the rocks and rapids of these last five years. They will demand, not so much that he hold his prow to one steady course, but that he avoid the rock just ahead which will send them to perdition if the steamer strikes it, and then, that, by a sudden turn, he steer clear of the next rock which will surely do what the first would have done unless it, also, is dodged in turn. Theories count far less than skilful practice. It is the pilot's duty to save men, not theories. After still water is reached below the danger, the critics may demonstrate how much better they could have steered, but the public puts its confidence in the man who brought them safely through when a judgment less accurate, an eye less discerning and a hand less steady would have split their hull on some jagged point and their bodies would have been tossed and battered by the raging flood.

No reader familiar with public affairs can glance over the field of the official activity and responsibility of Lloyd George without realizing that he is a man of tremendous endurance, of surpassing ability, of exceptional efficiency, of quick decision and of seemingly tireless good nature. All round the world stretches the British Empire, and at every point there is concerned the British imperial policy, of which he is the embodiment, of which he is the administrative head and for the success of which he is held responsible by the 150,000,000 persons, more or less, who are subjects of the empire, and also by the far greater number of millions of other nations, great and small, whose course depends in part upon the British policy in international politics. Look at the addresses which the man gives! All the time, it would seem from the record, that brain must be on tap, delivering wisdom on all sorts of subjects from London to Australia, from the Hebrides to Hong Kong, which will command the assent of the nations, confound his critics, reassure the doubtful and stimulate all beholders to press forward, confident that their leader is safe and sure. Such is the burden and the responsibility of one man. Would he not be more than human if he were not occasionally open to well-founded criticism? Is he to be condemned

and thrown out of office because he cannot meet all these emergencies with as much concentration upon each one as if that the only object in his mind's were eye? For answer, see how he has held his foothold with the people of Great Britain during all these momentous years.

IS HE AN OPPORTUNIST?

But is he always an opportunist? Has he genuine backbone, sticking to his position amid great adverse clamour and at much personal risk? This question is answered by his course toward Ireland. He took a position in the MacSwiney case which many condemned. He insisted that the British Government could not alter its position. It could not release MacSwiney or modify its treatment of him; if he persisted in carrying his hunger strike to its conclusion, that was on his own responsibility; it was not the act of the government. At the very latest, he has been immovable from his fundamental position regarding the relations of Ireland to the empire. If Ireland wants peace and prosperity on the same terms that Scotland and Wales have it, then Ireland can have it promptly. But if Ireland refuses to consider any proposition but absolute national independence, then Lloyd George says irrevocably no. He cannot be moved from that position. If the civil war is renewed, then, he says, this is the act of Ireland, not of the British Empire.

It is true that he has seemed to be feeling his way amid the complexities and the perplexities of the European situation. He has seemed to favour trade relations with the Russian Soviet republic. He has exposed the British Government to the charge that it is looking out for trade rather than for justice to the Russian masses and the overthrow of an intolerable, corrupt, inefficient and despotic government of a minority of the Russian people. He has not backed up France in its attitude toward Germany as much as the French people believe he should have done, but, for all that, he has maintained a close personal friendship with Premier Briand and there is no doubt that Britain and France will pull together if these two men have their way.

Just in the present crisis over limitation of armament it is of large moment what are the views of Lloyd George. He is quoted as saying that disarmament applies to all nations equally. He is said to have wanted restriction of armaments as one of the conditions of the much-discussed Anglo-Japanese alliance. Such a position reveals him in sympathy with the purposes of the conference at Washington, with the proviso that enough nations honestly agree to be bound by their action to make it effective. Whether or not he is able to bring his influential personality to the discussions in Washington, there is no doubt that his personal opinion will have great weight, whether it is delivered by word of mouth or over an ocean cable. It seems certain that if the other nations play a square game, Britain will be as square as any of them, and will throw its influence for the purpose which has inspired President Harding and to-day thrills the United States and all of the civilized world with the hope that at last mankind will be true to its better nature and no longer debase itself to the level of the brute.

Owing to disturbed conditions in and around Smyrna imports of skins and hides have almost ceased, while local tanneries are largely at a standstill, and there is little or no demand for raw materials. There are no shoe factories in the district, all articles being made by hand in small shops.

Gandhi the Man.

A Consideration of the Man and His Message Apart from His Political Activities.

BY THE RT. HON. SRINIVASA SASTRI.

We take the following from the *Survey Graphic* of America:—

Politics is not easily separable from life. Mr. Gandhi would not countenance the separation, for his great aim is to strip life of its sophistication and reduce it to its own nature—simple, rounded, pure. It merely happens that for the moment his activity is in the field of politics, it merely happens that for the moment he is confronting government and daring its wrath. It merely happens that for the moment his cry of *Swaraj* for India has caught the ear of the world and the world is anxious to know what his *Swaraj* is. His real and final objective is a radical reform of humankind. His gospel is "Back to Nature". He avows himself an implacable enemy of western civilization. In his mighty war against western civilization *Swaraj* for India is but a campaign. The rules of the campaign are the rules of the mighty war; the weapons to be used in the campaign are the weapons to be used in the mighty war; the virtues to be evoked by the campaign are the virtues which will win the mighty war in the end. The cardinal rule of both, the war and the campaign, is non-violence. Non-violence is of the heart as well as of the body. By thought, word or act you may not injure your adversary. Enemy in a personal sense is too strong a word for his dictionary. But as the adversary does not follow this rule, you will be subjected to great suffering and loss and court them; if you cannot rejoice in them, do not avoid or complain against them. Love your enemies; if you cannot love them, pardon them and never retaliate against them. Force is wrong and must go under. The soul is invincible; learn to exercise its full power. Hold to the truth at all costs: *Satya* triumphs in the end. Out of this cardinal rule, almost logically proceed a number of principles which will keep us straight in the war and this campaign for *Swaraj*. Since western civilization and the existing system of British government have to be got rid of, we must have nothing to do with either offspring of Satan; we must first cut off our connection with those large and powerful institutions by which they enslave us. There are schools, courts, legislatures. Withdraw children from schools, sue not for justice in courts, and avoid the polling-booths. Machinery being another invention of Satan and mills being the mainstay of British domination in India, boycott both, cease to import foreign cloth, and erect a spindle in each home. The motion of the *Charka* has mystic properties; its music chastens the soul, and its products most adorn the human form, especially the female form. These principles and courses of action have more or less permanent validity because the war against modern civilization must be expected to be of indefinite duration. It is a picked body, however—namely, the members of the *Satyagraha-asrama* in Ahmedabad—who are engaged in this exalted enterprise and owe lifelong allegiance to these principles and courses of action. The numerous levies now fighting in India under the flag of non-co-operation are enlisted only for a single campaign and may lapse into the common grooves of life as soon as the British government has been brought to its knees and has consented to change its basis. In the intensive operations of this campaign it may

become necessary to resort to civil disobedience of selected laws and non-payment of taxes. But whatever the severity of the measures which such action may provoke the authorities to adopt, non-co-operators are precluded from the slightest infraction of the commandment as to non-violence.

HIS VIEW OF LIFE.

To understand Mr. Gandhi's view of life, attention must be fixed on the rules he has laid down for the regulation of his Ahmedabad institution. Its name, *Satyagrahasrama*, means the hermitage of the determined practice of truth or the abode of soulforce. The *asrama* is still small. It has had no real chance of proving its vitality, for, ever since its establishment other things have claimed the energies of its founder. But the attainment of its objects is conditioned by the increase of its numbers and the acceptance by the community at large of those austere ideals which are at present exemplified in the lives of a few apostles. No estimate can be formed of the prospective influence of the new gospel without an examination of its real nature.

Truth in the highest sense is possible only where the individual enjoys complete freedom. All forms of force or coercion are thus at once barred. Compulsion, authority, government — these are anathema maranatha to one who at bottom is a philosophical anarchist. In fact, he describes the essence of his doctrine sometimes as love, sometimes as truth, sometimes as non-violence (*ahimsa*); these terms are in his opinion interchangeable. No organized government, in the ideal world, is justifiable. The merit of the British government is that it governs least. Even a family and a school must trust entirely to the power of love and moral reasoning. Flagrant misconduct he deals with by himself, fasting for a certain number of days, the guilty party being invariably brought to a state of contrition within that period. Sometime ago he applied this remedy to end a serious strike in a mill, the employers coming to reason for fear of incurring sin. Within the last few weeks the violence practised by some persons in Bombay in the name of non-co-operation on the occasion of the Prince of Wales' visit entailed this form of self-chastisement on his part, and by all accounts it had the desired result.

Nobody is entitled to possess more than is absolutely necessary for the moment. To hold in excess of the need is to be guilty of theft. He and his wife have given away all their property — he practised law for many years with success — and now own nothing beyond the clothes they wear and a change or two and may be a bag or box to contain these. The *asrama* in Ahmedabad contains the barest necessities.

Each person must supply his wants by his own exertion. The ideal is to grow the corn that one eats and weave the cloth that one wears. Even the brain-worker is not exempt from his bodily labor. In fact, the spindle has grown to be a fetish with Mr. Gandhi. Its music has a charm for him. He prescribes it for all, men and women. Boys must prefer it to books. Lawyers must cast away their briefs for it. Doctors must abandon stethoscope and take to it.

So far its products have been coarse; but, he asks, can a man or woman look more beautiful than in the *khaddar* made by himself or herself? When a lady pupil of his wore the first *sari* of her own making, he surveyed her and pronounced her divinely attractive. Without a doubt his eyes so saw her and his mind so judged her.

Control of the senses is a requisite of the first order of importance. It is very hard and can be only very slow. But it must be incessantly and ruthlessly practised. Luxuries are, of course, taboo. Even comforts must be steadily reduced. The palate is a particularly venal sense and has to be rigidly curbed. Simple hard fare is a condition of spiritual advancement. Celibacy is also enjoined on the inmates of the *asrama*. Married couples may not be admitted unless they agree to surrender their mutual relation and adopt that of brother and sister. If Mr. Gandhi had his way he would recommend this course to mankind. The resulting extinction of the species has no terrors for him. He merely asks, why should we not all go to a better planet and live on a higher plane? The question would not appear so fantastic after all to one who believed in the rebirth of souls according to the Law of Karma and remembered that no person would be a celibate except of his or her own free choice and when the sex passion had been transcended.

Machinery, being one of the most inseparable adjuncts of modern civilization, must be abandoned. It is of the kingdom of Satan. Mills and factories where the laborer is done out of his humanity, have no place in the scheme. The wealth they create, it needs no saying, is an abomination. Post and telegraphs and railways are likewise condemned, and with them goes the printing press. He says that every time he himself uses one of these instruments of civilization, he does so with a pang! It would be nearly as hard for him to carry on his work without resort to them as it would be to escape from the atmosphere of the hearth; but perhaps the use of evil might be defensible in its own destruction. Rapid and easy means of communication have but multiplied crime and disease; could not man infer from the fact of God having given him legs that he was not intended to go farther than they could carry him? What are ordinarily called the benefits of railways and similar things are in reality the opposite, being added enjoyments or means of gratifying the senses.

Medicine does not escape his judgment: he calls it black magic and actually says it is better to die than be saved by a drug prescribed by the doctor. The fear of immorality and unhealthy modes of life have been materially weakened, if not totally removed, by the hope of being saved from the evil consequences by the help of the doctor. A return to the cure of nature and her simples would redeem mankind.

These and similar doctrines, which appear harsh to the ordinary person, form the substance of Mr. Gandhi's ethic. Let it not be supposed that they are logical abstractions formulated for the purposes of a moral treatise or sermon, and with no intended application to life. Their propounder practises them in the spirit and in the letter, and the limitations on their practice do not proceed from any tenderness for himself or his relatives. His renunciation of worldly goods has been already mentioned. He does not seek the medical man in sickness. He eats hard fare. He wears *khaddar* woven by his own hands and in that dress and barefooted appears before the Viceroy of India. He knows no fear and shrinks from nothing which he advises others to do. In fact, his love of suffering and hardship as a means of spiritual progress is almost morbid. His compassion and tenderness are infinite, like the ocean to use an eastern simile. The present writer stood by as he wiped the sores of a leper with the ends of his own garment. In fact, it is his complete mastery of the

passions, his realization of the ideal of a *sanyasin* in all the rigor of its eastern conception, which accounts for the great hold he has over the masses of India and has crowned him with the title of Mahatma or the Great Soul.

SOME MINOR DOCTRINES

Now to a few other doctrines of a subordinate grade. Curiously enough he is a believer in the system of caste, though the pride of caste and its exclusiveness will receive no quarter from him. Apparently he is convinced of its beneficence, if maintained in its original purity, and holds it to be of the essence of Hinduism. In this belief, however, he is not likely to be followed by a great section of his countrymen, who are anxious to restore their religion to its ancient purity. But he is at one with them and in fact with the awakened conscience of India in desiring to exorcise the demon of untouchability. Millions of people are held by caste Hindus to be beneath their physical touch and live in conditions which are scarcely fit for human beings. These he would uplift, asserting that Hinduism gives no kind of justification for the abuse. But his work for the depressed classes, as they are called, would take the form which has quite recently been given to social work of that kind in the West. He would have the worker cast aside his own status and live the life of the class to be helped to do their work and earn their wage, exactly as they do. So only can real understanding and sympathy come; so only can that confidence be engendered which is the essential pre-requisite of all work of amelioration.

His non-co-operationist followers seem in places to have mixed up his humanitarian work with politics and so suffered a check. In the Mahatma's eyes no political rights will be of the slightest use to a community which is the prey of great social failings, and work for *Swaraj* can never reach any success without simultaneous work for great social reforms. But violent political excitement is not a favourable condition for such activity. The indiscriminate

antagonism of Government and its officials is only to be expected to the activities of hosts of young picketers, who are pledged at the same time to embarrass and even destroy the ordinary administration.

The educational ideals of the Mahatma have not yet received a clear expression. To compulsion, even of rudimentary education, he must be averse. The higher science and arts, the specialized forms of historical research or economic inquiry, with their glorification of machinery and wealth in its varied forms, will find no room in his simple scheme. Of the necessity of introducing one language for common use in India he has been for long a persistent advocate. He has chosen Hindi for the place of this *lingua franca*. With characteristic earnestness he has collected funds for the purpose of spreading a knowledge of this language and has sent out enthusiastic teachers to all parts of India. The non-co-operation turmoil may have for the time overshadowed this activity. Perhaps, too, the bulk of educational workers in India has not yet accepted the Mahatma's conclusions in this regard, and for this reason his efforts on behalf of Hindi have not been co-ordinated with the educational work of the country generally.

HIS INSPIRING SAINTLINESS.

The writer of these lines is not one of Mr. Gandhi's political followers or a disciple of his in religion. But he claims to have known him for some years and to have been a sympathetic student of his teachings. He has felt when near him the chastening effects of a great personality. He has derived much strength from observing the workings of an iron will. He has learned from a living example something of the nature of duty and the worship due to her. He has occasionally caught some dim perception of the great things that lie hidden below the surface and of the struggles and tribulations which invest life with its awe and grandeur. An ancient Sanskrit verse says: "Do not tell me of holy waters or stone images; they may cleanse us, if they do, after a long period. A saintly man purifies us at sight."

Independent Indian Mercantile Marine.

In the current Session of the Imperial Legislative Assembly, Sir Sivaswamy Iyer proposed that certain specific measures be taken to create an independent Indian mercantile marine in the near future and demanded Government aid for the purpose. While sympathizing with the object of the mover, Mr. Innes, the Government Commerce Member, got afraid at the specific proposals and induced the mover to consent to a harmless and non-committal proposal of appointing a committee "to consider the measures which could usefully be taken". This is a method of side-tracking so frequently practised by the Indian Government against which every self-respecting Indian must protest. The difficulties trotted out by Mr. Innes deserve scrutiny. (1) Comparing Japan with India, Mr. Innes held that Japan was an island and had to protect her coast and India was not so situated; (2) The Government have seriously to count the cost of a subsidy-and-aid policy before adopting it as Japan has done; (3) India is fortunate in that Britain would be protecting her coast which would otherwise cost her enormous sums; (4) Foreign competition in ship-building is keener to-day than it was when Japan, a generation ago, entered her naval programme; (5) Ship-building is a very complex industry and experts are of opinion that it would take long time before India would equip herself with a sufficient number of nautical

colleges and universities so essential for the training of the candidates. In reply it may be said:— (1) If Japan is an island, India is a peninsula and the length of Indian coast line is not less than that of Japan; neither is India's foreign trade less important for her economic prosperity, nor is the sea-basis less important for India's defence. (2) The difficulty about money is not a new one, but the people will be pardoned if they resent the cheese-paring policy of the State whenever development problems are mooted, while money runs like water to equip the military, to increase the salaries of the higher services, war-bonus, allowances, etc. (3) India is certainly grateful to the British Navy, but the people have a just cause for grievance in that the *Indian* money contributed to maintain that Navy is not utilized to enable *Indians* to defend their coast or get the necessary training in the art of self-defence or provide careers for the sons of the soil. (4) As a matter of fact foreign competition is inevitable in all schemes of economic activity in India. The remedy is not to get afraid at the prospect, but to devise measures to minimize the evils by well-considered State-legislation or otherwise. (5) When the demand for *Indian* nautical men comes, the institutions for supplying these will rise of their own accord, if the Indian Government, like the Japan, moves in the right spirit.



Banking and Finance.

INDIAN AND FOREIGN.



Some Banking Speeches.

The contribution made by the chairmen of the large British banks to the discussion of the financial problems of the day, in the speeches delivered at the annual meetings, has long since been recognized as very valuable and instructive to the general public, and especially to those who have fewer opportunities of learning the facts and discerning the economic tendencies at home and abroad. These speeches deservedly carry great weight, and it would be well if the leaders of the political world studied them closely.

Mr. McKenna, Chairman of the London Joint City and Midland Bank, dealt, with his accustomed lucidity, with the problem of unemployment. He handled the subject from the standpoint first, of external conditions, secondly, from that of existing labour conditions, and, thirdly, in the effect which excessive taxation has upon employment. Restoration of Europe, he showed, was a prime necessity to active trade in this country, and an essential preliminary to such restoration was the settlement of the terms of the German indemnity upon a sound economic basis. Mr. McKenna patiently examined the common labour fallacy that restriction of output meant less employment, and finally expounded the evils of excessive taxation and called for the strictest economy in our national expenditure.

SIR W. H. GOSCHEN'S SPEECH.

The speech of Sir W. H. Goschen at the meeting of the National Provincial and Union Bank of England was characterized by some cheering, if restrained, comment on the trade outlook. He confessed that he could not help feeling that there was some break in the cloud of depression which had been hanging over our trade so long and that the worst of our troubles were over. As he indicated, retailers have not lowered prices to the same degree as manufacturers and the wholesale trade, but Sir W. H. Goschen believes that retailers are beginning to realize that losses have to be faced and that prices have to be brought down to a reasonable level. His summing-up of the outlook was distinctly encouraging. He stated that, taking all things into consideration, he thought that the outlook was certainly brighter than a year ago but he wisely added that no one wishes to see a boom in trade this year.

At the meeting of Barclays Bank's shareholders Mr. F. C. Goodenough advocated a courageous financial policy, and suggested that it were better to follow a policy of productive expansion resulting in the development of new markets and new sources of supply rather than be compelled to fall back upon other remedial measures, which would certainly call for inflation, such as relief work or doles.

Economy Campaign in U.S.A.

The National Bank of Commerce of New York discusses the present situation in the following notes :-

Business is better and sentiment throughout the country reflects courage. Such progress as has been made by the business community toward

normal conditions results from a realization that artificial levels of activity will not again be reached in any period near enough to affect the problems of to-day, and from a determination to practise economies of operation more rigid than heretofore thought possible. The need of personal effort and economy is also being increasingly recognized in giving a day's work for a day's pay and in care as to personal expenditure. Businessmen and executives now recognize that henceforth they must give the most thorough personal attention and application to their enterprises. Some part of the recent gain in business is unquestionably a result of seasonal demand. Permanent improvement depends to a large extent on foreign buying power, and even more on the adjustment of conditions under which the farmer operates. The last three years have clearly shown that the European situation can be stabilized only by the political and economic efforts of the countries concerned. Domestic conditions can be bettered by steady determination on the part of corporations and individuals to secure greater efficiency and to practise greater economy. This will result in gradual re-adjustment of the burden of price inequalities now resting on the farmer.

POSITION OF THE FARMER.

The unsatisfactory situation in agriculture dominates the business outlook. In the cotton States the relatively high price of cotton has encouraged the farmer, but uncertainty both as to demand for cotton goods and as to the size of the admittedly small crop has minimised the beneficial effect of better prices. Farmers in the grain States will hardly break even on 1921 operations at current prices of corn and wheat. While it is true that the prices of goods used by farmers have fallen, they are still well above the 1914 level. Grains are all close to or below pre-war prices. In the face of these facts, the contention is not well founded that the farmer is wilfully refusing to buy, thereby delaying the return of better times. The farmer represents about half the consuming power of the United States. The prices of crops are determined in the international market, and there are no reasonable grounds for an expectation of marked increase in those prices at any time in the immediate future. Reduction in the prices of what farmers buy would have exactly the same effect as higher prices for agricultural products. It is futile to contend that because of higher labour and transportation costs the prices of other articles and commodities cannot decline to the level of agricultural prices. If ways are not found to lower the prices of all classes of goods which they need, and would like to buy, by means of lower money wages, higher labour efficiency, cheaper transportation and lessened distribution costs, the farmers themselves will not suffer greatly, but business of all kinds will be forced to operate on a restricted basis.

COMPETITION BETWEEN MANUFACTURERS.

In the period immediately ahead, manufacturers will face the most severe competition in a generation. It is now clear that many important industries are seriously over-built, when measured in terms of

effective demand here and abroad. There is no method by which competition can be avoided, but there are methods by which it can be successfully met. Overhead charges should be rigidly examined and cut to the lowest point consistent with productive efficiency. Costs should be critically studied and such examination should include not only factory operations, but the entire producing organizations. In periods of high profits, useless frills are certain to be introduced into the best systems. Simplicity is now of necessity the watchword and much careful but courageous elimination is necessary. In many lines labour costs must be further reduced. Such reduction can in part be attained by lower wages, and in part by increased efficiency in organization for production. A considerable part of labour inefficiency is at times due to actual defects in plant and organization. Business has two duties, first, to provide the best means for efficient production by its labour, and second, to insist on a day's work for a day's pay.

Business Names.

A Special Correspondent writes to the *Times Trade Supplement* :—

The Board of Trade and the Economy Committee have at present under consideration the question whether any amendments are necessary in the Registration of Business Names Act, 1916, and the Companies (Particulars as to Directors) Act, 1917—the Board of Trade to meet objections raised by various parties; the Economy Committee with a view to curtailing the staff engaged in the carrying out of the Acts.

The first of these Acts was passed during the war, not as a war measure, as is often stated, but to meet the demands of the commercial community long expressed. The fact that we were at war assisted in securing the enactment of the measure, but that there should be a registration of all persons trading under names other than their own was long sought by the Chambers of Commerce throughout the country. The Companies (Particulars as to Directors) Act, 1917, was passed solely with the object of bringing the particulars required to be registered by companies into line with those required under the Business Names Act of 1916.

Recent events in the Courts have drawn attention to the Business Names Act and its provisions. When all the circumstances are considered no one can suggest that there is any real hardship in the obligation imposed on a business man to register his name and address and any other business with which he is connected when he decides that it is for his benefit to continue to trade under a name other than his own. The public has a right to know who he is. The registration is a mere formality, and the cost only 5s. A point which is often forgotten is that failure to register entails under the Act the loss of the right to sue at law. The Board of Trade have been indulgent in their attitude towards those who have failed to register. They have drawn their attention politely to the fact—not once, but repeatedly, and only after repeated refusals has action to compel compliance with the law been taken.

It is understood that the Association of British Chambers of Commerce considers that the Act has been of great service to the commercial community, and that no amendment is necessary to it. The Association promoted the Bill which secured the passing of the Act, and it is in an excellent position to say whether its provisions, as carried out, have proved of value.

The Companies Act, 1917, requires that the names of all directorships held by a director of a registering company shall be furnished and revised annually in the return to Somerset House. The suggestion has been made that this is an onerous requirement, and that it might be dispensed with, or at least modified. It is understood that the Association of British Chambers of Commerce approves the Act as it stands, and considers that there is no real hardship in a company's secretary furnishing the particulars required. The Association believes that this Act has also been of great service to the commercial community, and that no amendment should be made in its provisions. On the other hand, the Federation of British Industries considers that the Act of 1917 might well be repealed. Its objection is entirely to the amount of work involved in furnishing a full list of directorships and of notifying alterations in the list. It thinks that while this information may have been of value during the war, the necessity for it has now ceased. The Federation, however, would appear to have forgotten that these two measures were not war measures, that similar legislation was enacted in most of the other countries of the world long before the war, and that, while the names of a director of a company is in many cases sufficient to assure the public that the company with which he is connected is all that it should be, there are many other cases where one might like to know whether a director of a particular company is connected with any other companies of a similar kind, or with foreign companies of a doubtful character.

Another objection raised by the Federation is against the obligation to place the names of directors on the letter paper of a company, but it should not be forgotten that in suitable cases relief from this obligation is granted by the Board of Trade. The fact that it is so granted is a testimony to the character of a company.

It would not appear that there are many serious objections to these two Acts, and the Board of Trade would do well in the interests of the country and of the commercial community to continue them and carry them out in the same generous spirit as the Department has evidently done in the past.

It is believed that the fees received from the registrations have more than covered the cost of working the Acts. If this is the case the Economy Committee might devote attention to other Government geese which lay no golden eggs.

Indian Budget : an Analysis

The Financial statement shows a deficit in India's Budget of 34 crores. This is the fourth deficit in succession and the excess of expenditure over revenue in the last four years comes to 90 crores.

The figures for the current year are :—

	Revenue.	Expenditure.	Deficit.
	crores	crores	crores
1921-22	108	141½	34
The estimated figures for the coming year are :			
1922-23	110½	142½	31½

Which deficit, it is hoped to reduce by the following provisions :—

Increased Passenger fares yielding	6	crores.
Higher postal charges	1·6	„
Increased Customs duties	14·9	„
„ Income and Super-Taxes	2·25	„
Salt Duty increase	4·3	„
	29·05	„

This would raise the revenue for the current year

to 139½ crores, which would leave a deficit of merely 2¼ crores.

The Finance Member anticipates the total borrowing of 52½ crores.

BUDGET POINTS.

In introducing the Budget at Delhi, Sir W. M. Hailey said the incomings of the current year have fallen far below our expectations and the estimates for the coming year disclose a heavy excess of expenditure over revenue.

The estimated revenue for the current year would be 108 crores or 20½ crores less than as originally estimated.

Customs show a falling off of 4¼ crores.

Taxes on income will fall short by 20 lakhs of the Budget figure of 18½ crores.

Salt will be short by about 80 or 90 lakhs.

Opium will be short by 70 lakhs.

Instead of 87 crores from Railways, the yield was only 83. Working expenses of the Railways showed an excess of 7¼ crores over Budget figure.

For the first time for many years railways would be working at an actual loss, over 2½ crores.

Posts and Telegraphs yield 1½ crores less than anticipated and the total loss to the general taxpayer on the current year will be about 90 lakhs.

The excess in the current year's expenditure on Military Accounts was 2¼ crores, owing to heavy expenditure in Waziristan.

Loss by Exchange, owing to the failure of the Rupee to reach 1s. 8d. must be taken at 5¼ crores.

The total expenditure was 14¼ crores more than expenditure and the total deficit was 34 crores. This was the fourth deficit in succession and the excess of expenditure over revenue in the last four years came to 90 crores.

For next years the Customs revenue is estimated to improve to 36.42 crores nearly 3 crores in excess of the current year's receipts.

Under taxes on income a revenue of 19.84 crores is budgetted for about a crore less than the current year.

Salt and Opium are estimated to produce about the same revenue.

RAILWAY FARES INCREASED.

The Railway gross traffic receipts for next year are estimated at 94½ crores, working expenses are estimated at 68½ crores, the net receipt will work out at 24½ crores. After allowing for interest and other indirect charges which will amount to 26 crores, the Railways will be working at a loss of over one crore. The estimates given take account of a substantial increase in the goods rates in place of the existing sur-tax. An increase averaging 25 per cent. producing an extra 6 crores of revenue will be made in passenger fares.

A loss of 80 lakhs is anticipated on the postal and Telegraphs.

REVENUE AND EXPENDITURE NEXT YEAR.

The total revenue for the coming year, including the increase in railway passenger rate will amount to 1.16½ crores, as against the estimate of 1.08 crores for the current year.

Dealing with expenditure, the Finance Member said that no provision had been made for new expenditure which was not of imperative necessity. His estimates were based on an average rate of exchange of 1s. 6d. On that assumption the debit necessary on the accounts which are maintained on a 2s. basis will be about 15¼ crores. No provision has been made for any reduction in the contributions payable to the Central Government by the provinces

for the simple reason that, with the certainty of a deficit staring Government in the face, it is quite impracticable to do so.

Military charges would be 62.18 crores, approximately the same as in the current year.

The total expenditure was estimated at 142¼ crores, against a revenue on the basis of the existing taxation, including the Provincial contributions, of 9.20 lakhs which will amount to 1.10½ crores, i.e., a deficit of 31¼ crores which would be reduced to 25¼ crores by the contemplated increase in passenger fares.

HIGHER POSTAL CHARGES.

We propose to raise the ¼ an. postcard to ½ an.; ½ an. and 9 pies letter rate will be abolished, making the charges for letters, 1 anna for letters not exceeding 2½ tolas and 1 anna for every additional 2½ tolas. These will increase the revenue by 1.60 lakhs. This with the increase in railway passenger fares will reduce the estimated deficit to 24 crores and 16 lakhs.

INCREASED CUSTOMS DUTIES.

Articles now assessed at 11 per cent to be raised to 15 per cent.

Piece-goods will be taxed by a further 4 per cent by raising the Cotton Excise duty from 3½ to 7½ per cent.

The import duty on Machinery, Iron and Steel, and Railway Material will be raised from 2½ per cent to 10 per cent.

Foreign Sugar import duty will be increased from 15 to 25 per cent.

Duty on matches will be raised from 12 annas to Re. 1-8 per gross boxes and excise duty for 1 anna a gallon will be levied on kerosene produced in India with an anna increase on duty on imported petroleum.

An imported duty of 5 per cent will be levied on imported yarn.

Imported articles now assessed at 20 per cent will in future be assessed at 30 per cent.

There will be an increase of approximately 20 per cent on duties on all alcoholic liquors except wine.

The total increased revenue from Customs is estimated at 1490 lakhs.

INCOME-TAX.

The rate of tax on incomes between Rs. 30,000 and Rs. 40,000 will be raised from 14 to 15 pies and on incomes above Rs. 40,000 from 16 to 18 pies.

Super-tax will be regarded in the higher rates, working up to 6 annas as against the existing rate of 4 annas. The increased revenue from Income Tax is estimated to yield 2¼ crores.

SALT DUTY.

Salt duty will be increased from Rs. 1-8 to Rs. 2-4 a maund, yielding a total increase in revenue of 4.30 lakhs.

The total increased revenue from these various measures is estimated at slightly over 29 crores leaving an uncovered deficit of 2¼ crores.

WAYS AND MEANS.

The Finance Member anticipated the total borrowing of 51½ crores.

For the purposes of the estimates a rupee borrowing of 25 crores and a sterling borrowing of 17½ million pounds have been entered but the Government does not bind itself to distribute the borrowings as between India and England in this particular proportion.

During the last year 407,000,000 tons of bituminous coal were produced in the United States and 83,000,000 tons of anthracite, as compared with 557,000,000 tons and 89,000,000 tons respectively in 1920.

Mysore Economic Development Board Progress Reports.

Board of Industries and Commerce.

Proceedings of the 10th meeting of the Board of Industries & Commerce held on Saturday the 25th February 1922 at the Chambers of the 1st Member of Council, Public Offices Buildings, Bangalore, commencing at 3 P. M.

Present.

A.R. Banerji, Esq., C.S.I., C.I.E., M.A., I.C.S.,
(Chairman)

The Director of Industries and Commerce.

The Chief Electrical Engineer in Mysore.

The Industrial Chemist.

Rajasabhabhushana Dewan Bahadur

K. P. Puttanna Chetty, C.I.E.

B. K. Garudachar, Esq.

V. Manickavelu Mudaliar, Esq.

M. Venkatasubbiah, Esq.

Md. Abbaskhan, Esq.

C. Narasimhiah, Esq., B.A., B.L.

G. Paramasivayya, Esq., B.A., LL.B.

P. A. Barton, Esq.

Singri Nanjappa, Esq.

H. Baswe Gowda, Esq.

C. Narayana Chetty, Esq.

Sylvester Pais, Esq., B.A.

W. E. Clifford, Esq.

C. Subba Rao, Esq.

B. Oosmankhan, Esq.

Secretary.

M. S. Ramachandra Rao, Esq., B.A.

1. Consideration of the report of the All-India Sugar Committee.

Printed copies of the All-India Sugar Committee's report and a typed summary of the recommendations relating to Mysore were circulated to the members beforehand.

The Chairman briefly explained the several attempts made by the Board and Government regarding the floatation of a large Sugar Factory in the State and invited the opinion of the members who were acquainted with the mercantile and commercial possibilities of the Industry. He particularly referred to the Tata's Sugar Corporation which was in a more or less moribund condition and urged the necessity of proceeding cautiously in the direction of taking any practical action on the several recommendations of the Sugar Commission.

The Chief Electrical Engineer pointed out that the Tatas have assigned and issued share certificates to those who have paid Rs. 10 out of Rs. 50 per share. They have also sent out a Sugar expert to go round the country and select suitable lands for sugarcane plantation but the general disorganised condition of the market stood in the way of starting the Factory at once. He wanted the Board to clearly define whether they would recommend to Government not to levy any extra water-rate to such of those who might come forward to take up large plots of land for sugarcane cultivation and make their own arrangements for the supply of water by investing large sums of money on such irrigation scheme.

Mr. K. P. Puttanna Chetty remarked that unless the 2nd stage of Kannambadi dam was completed, there was no chance of bringing large blocks of land in a continuous stretch under sugarcane cultivation. He said that it was only then it would be possible to get between 3 to 5 thousand acres in a block to cultivate sugarcane. If such large tracts were formed, he thought, it might then be possible for any large syndicate to come forward and undertake the establishment of a large sugar factory in the State.

The Chief Electrical Engineer said that unless a Central Factory is given facilities to control the cane cultivation, the Company would have to be completely at the mercy of the ryots for the supply of raw materials. He again wanted to know whether it was intended to levy wet rate or dry rate or additional waterrate to the areas which might be brought under cane cultivation.

Mr. B. K. Garudachar observed that unless the ruling market-rate of jaggery was at least one-fourth of the price of the refined sugar, there was no chance of any Sugar Factory working on a commercial basis. He said that the business world was anxiously awaiting the imposition of an extra import duty of at least 15% by the Government of India on the refined sugar imported from outside the country and hoped that if the rumour materialized there were some prospects of making sugar manufacture a paying business in India.

Mr. Narayanachetty insisted upon studying in detail the conditions prevailing in Java regarding sugarcane cultivation by deputing a special officer and find out if it could be possible to manufacture sugar at the pre-war rate, viz., Rs. 2-12-0 per maund. Unless this was first ascertained, there was no use of rushing through the sugar scheme.

The Industrial Chemist pointed out the possibilities of manufacturing sugar from jaggery on a large scale. He said it would be better to offer suitable concessions to those who were willing to come forward to undertake the cultivation of large blocks of land, say from 100 to 500 acres of land by adopting improved methods. He then referred to the concessions recently granted by the Travancore Government in this connection and said that some action on similar lines in this State would be desirable.

The Chairman said that Travancore was a large sea-port town and that the conditions prevailing there were quite different from the conditions obtaining in Mysore.

Mr. G. Paramasivayya said that the Agricultural Department has been doing the needful experimental work for introducing improved methods of cane cultivation and that no further action in the shape of any concessions need be considered by this Board in the direction of bringing large blocks of land under sugarcane cultivation.

Mr. B. Usmankhan suggested that a list of lands suitable for cane cultivation be prepared and published widely for general information so that people might see the relative advantages of growing sugarcane and other food grains.

The Chairman remarked that after a personal inspection of the lands under the Vani Vilas Sagara and noting the eagerness with which ryots were applying for land there, he was of opinion that Dr. Coleman's wholesale condemnation of the lands in that locality as quite unsuitable for cane cultivation required further examination.

It was pointed out that there were about 2,000 acres under Marikanave which might be sub-divided and allotted to individuals for cultivation but which Government had reserved for sugarcane. It was necessary therefore that Government should either bring about a large sugarcane plantation or give the lands to the ryots who were eager to take them up.

After full discussion, it was resolved—

(1) that a list of Government lands fit for sugarcane cultivation be prepared and published for general information with the actual concessions such as land tenure, water rate, etc., which the Government were prepared to offer;

(2) that such lands be reserved for a period of six months from the date of the publication of the list referred to above for being leased for sugarcane cultivation;

(3) that Government may be informed that the Board is of opinion that special concessions in the shape of remission of additional water-rate may be shown to such of the Companies who might come forward to make their own arrangements for water supply, provided such concession does not prejudice existing and vested interests.

2. Consideration of a scheme for the development of Mineral Resources in the State.

The proceedings of the Mineral Sub-Committee and the opinion of the Director of Industries and Commerce thereon were circulated to the members for information and discussion.

Mr. V. Manickavelu Mudaliar opened the discussion by saying that he would require at least 15 days to explain the practical difficulties that at present hindered the growth of Mineral Industries in the State. He said that Mysore contained many precious minerals such as, diamond and rubies, all of which lay unexplored for lack of sufficient capital and enterprise in the State. He was therefore of opinion that in order to attract enough foreign capital and outside help, it was absolutely necessary to form a central syndicate on the lines suggested by the Sub-committee. He deprecated the use of the word monopoly whenever the subject came up for consideration because he would like to point out that the syndicate contemplated only aimed at collecting a large amount of capital for exploring the mineral ores and was prepared to allow Government a decent portion of the profits. The syndicate had to incur great risks before making a mineral industry pay. It was therefore but natural that they should be given sufficient protection to develop the mineral resources without being constantly exposed to unhealthy competition. He concluded by saying that the present mining rules required considerable modification.

The Chief Electrical Engineer said that the mining policy of the State had considerably changed during the past 2 or 3 years. The original idea of Government starting industries directly was gradually dying out. It was therefore necessary to go back to pre-war conditions and modify the rules relating to reservation and prohibition of export of raw materials, etc. He drew pointed attention to the fact that it was only enterprising private companies that found and developed the gold, the asbestos and the manganese

mines in the State. He was therefore of opinion that sufficient inducement should be given to private men by offering liberal concessions for exploration according to up-to-date methods. He emphasised the necessity of affording adequate protection to those who would come forward to undertake the pioneering work.

Mr. K. P. Puttanna Chetty remarked that Mr. Manickavelu Mudaliar always gave a rosy picture of the latent mineral resources of the State which did not quite correspond with facts. In this connection, he invited the attention of the members to the observations made by Dr. Smeeth and the views of the Geological Department according to which they were told that the mineral resources of the State were neither so abundant nor varied nor rich as was popularly thought. He, however, thought it expedient and unnecessary to create a central syndicate as contemplated by the Sub-Committee; but he would have no objection for giving limited concessions to really enterprising men who would come forward to undertaking prospecting work on a large scale with a view to establishing any particular industries.

Mr. G. Subba Rao said that there would be no harm in offering sufficient inducement to those who were enterprising enough to come forward to work the hidden deposits.

Mr. G. Paramasivayya said that exportation of raw materials should be strictly prohibited. He knew as a matter of fact that most of the raw materials could be utilized to start primary or subsidiary industries locally which would greatly help to provide work for the masses in Mysore.

Mr. B. K. Garudachar would prefer to give temporary protection for at least 5 years to those who would come forward to undertake great risks.

The Chief Electrical Engineer said that certain portions of raw materials could not be used locally for many reasons and it was therefore of no use to bind the Company not to export any portion of the raw material collected at enormous cost. There was therefore no harm in allowing the export of such raw materials as could not be advantageously utilized in this country.

The Director of Industries and Commerce agreed with the above remarks and said that a suitable proportion might be fixed between the raw materials locally utilized for manufacturing purposes and that proposed to be exported.

Mr. G. Paramasivayya emphasised that unless it was found absolutely certain that the raw materials could not be utilized locally with advantage, the restriction should continue.

Mr. K. P. Puttanna Chetty pointed out that raw materials like kaolin could be converted into useful articles and that such things should not be allowed to be exported indiscriminately.

The Chairman then put the whole discussion under the following two heads:—

(1) Whether the formation of a central syndicate with exclusive monopoly rights as suggested by the Mineral Sub-Committee was necessary, or

(2) Whether it should be enough if sufficient protection were given to those who would come forward to exploit particular minerals with a view to develop industries locally with limited concessions.

He requested the members to come to some definite conclusion on the subject as indicated above.

Mr. Abbaskhan desired a postponement of the discussion on the subject in order to enable a still further consideration of the scheme with the Director of Geology being present.

Many of the members were agreeable to the alternative proposition No. 2 being treated as an amendment to the first proposition.

Mr. Abbaskhan raised a point of order and said the amendment negated the spirit of the original proposition and that sufficient time should have been given for moving the amendment.

The Chairman said that strict rules of debate might be relaxed in considering the general policy of a scheme like the present one which has been engaging the attention of Government from a long time rather than confining themselves to a particular recommendation of the Sub-committee. He added that the whole mining policy of Government was under scrutiny and it would therefore strengthen the hands of Government if this Board came to a decision quickly and recommended the adoption of a general policy to suit the altered conditions.

The first proposition was then put to vote and was declared lost.

The Chairman then put the second proposition in the following form to vote which was carried by a large majority.

Resolution No. 2.—Resolved that the Board is not in favour of entrusting the work to a central syndicate as suggested by the Mineral Sub-Committee but they would recommend the reversion to the original mineral policy of Government adopted prior to 1916, viz., withdrawal of restrictions as regards reservation of minerals and exportation of raw materials leaving the discretion to Government to decide about the framing of detailed rules in the light of the above discussion.

The Board would also recommend the introduction in the rules of some special or temporary protection in the case of those who would undertake to manufacture finished products within the State out of local raw materials.

3. Concessions required by Messrs. V. Manickavelu Mudaliar & Son for starting a Porcelain Factory in the State.

After a brief discussion, it was decided to recommend to Government that the subject may be disposed of on the general lines of policy set forth in Resolution No. 2 above.

Resolution No. 3.—Resolved that Government be informed that the application of Messrs. V. Manickavelu Mudaliar & Son be disposed of according to the general policy recommended in Resolution No. 2 above.

4. Introduction of Life Insurance Act in Mysore.

Mr. C. Subba Rao said that some safe-guards should be provided in the Statute for protecting the interests of policy-holders in the State.

Some members were of opinion that it was too premature for enacting legislation in this connection and pointed out that it would be difficult to control effectively the foreign capitalists who were doing business in the State.

Resolution No. 4.—Resolved that no legislative enactment on the lines of the British Assurance Companies Act of 1912 was necessary in the State for the present.

5. Development of Lac Cultivation and its use in Manufacture.

It was decided to await the final recommendations of the Lac Sub-Committee.

6. Development of Joint Stock enterprise in the State.

It was pointed out that it was quite desirable to separate the officer initiating the formation of Joint-Stock Companies in the State and the one who ins-

pected the working of the same provided they did not lead to an additional appointment.

Resolution No. 5.—Resolved that the recommendations of the Sub-Committee be accepted and sent up to Government for favourable orders.

7. Review of work done in the Districts.

The summary of work done in the Districts was circulated to the members and it was decided to record the same.

8. Continuance of concessions to the Proprietor of the Shimoga Modern Hindu Hotel.

Mr. C. Subba Rao explained that the continuance of the concessions was necessary for at least another year.

The Chairman observed that if the Proprietor of the Hotel left out the management charge in calculating the profits, the Hotel might be easily run on a commercial basis.

Some members observed that as the Board had already resolved on a policy of withdrawing all the concessions hitherto granted to the Proprietors of the Modern Hindu Hotels, it would not be fair to show any special treatment to the Shimoga Hotel.

Resolution No. 6.—Resolved that no further concessions should be granted to the Proprietor of the Shimoga Modern Hotel.

Before the proceedings of the day came to a close Mr. K. P. Puttanna Chetty said that it was perhaps the last occasion when Mr. A. R. Banerji would preside over the deliberations of the Industries & Commerce Board. He pointed out that Mr. Banerji came to them six years ago with large experience at a psychological moment when development work was at its zenith on account of the world-war conditions. The people of the State were particularly fortunate in having secured Mr. Banerji's valuable services and thought it a great privilege to pay their humble tribute to the able, wise and practical way in which he worked for the good of the State. The members of the Board were extremely sorry to have to lose his services but they were glad to hear that in his future career he would prove still more useful and would play a greater part in moulding the policy of a larger community. He therefore thanked Mr. Banerji on behalf of the members of the Board for having endeared himself to the non-official public by his uniform courtesy and sympathy. He wished him a prosperous and happy career, in his new sphere of activity.

The Chairman suitably thanked Mr. Puttanna Chetty for the appreciative manner in which he and his work in Mysore were spoken of. He said that though there might not have been much tangible result as a result of the deliberations of the Board there was a bright future before the Department of Industries and Commerce and this Board and that he would be glad to hear of the work done by these agencies in improving the economic condition of the people of Mysore. He remarked that if any success has been achieved, it was in a large measure due to the hearty co-operation and cordial sympathy that he received from the members of the Board. He once again thanked Mr. K. P. Puttanna Chetty and the members of the Board for the kind manner in which they had spoken of him and his connection with the Industries and Commerce Board.

The meeting then terminated.

(Sd.) A. R. BANERJI,
Chairman,
(Sd.) M. S. RAMACHANDRA RAO,
Secretary,
Board of Industries
& Commerce.

Board of Education.

The following is a summary of the Proceedings of the eleventh meeting of the Board of Education, held at 12 noon, on Saturday the 3rd December 1921, in the Chamber of the Third Member of Council, Public Offices, Bangalore.

Present.

Mir Humza Hussain, Esq., B.A., B.L., (Chairman).
The Inspector-General of Education.
K. Chandy, Esq., B.A.
Rao Bahadur M. C. Rangengar, B.A.
D. Kongadiappa, Esq.
C. Krishna Rao, Esq., B.A., B.L.
G. Devoji Rao, Esq.
A. Anantaiya, Esq.
C. Madhava Rao, Esq., B.A., LL.B.
Jade Subba Rao, Esq.
S. R. Balakrishna Rao Esq., B.A., LL.B.
M. Subbiah, Esq., B.A.
Praktana Vimarsa Vichakshana Rao Bahadur
R. Narasimha Char, M.A.
Mrs. Srirangamma, B.A.
Rajasabhabhushana Rev. Father Tabard, M.A.
Gulam Ahmed Kalami, Esq.
Rajakaryaprasakta Rao Bahadur M. Shama
Rao, M.A.
K. Srinarasimhaiya, Esq., M.A., L.T.
A. K. Yegnanarayana Iyer, Esq., M.A.

I. Revision of rules *re* : backward class scholarships. (Letter No. 728-Edn. 16-20-18, dated 16th August 1921, from the Secretary to the Government, E. and A. Departments. (Appendix B.)

The Chairman observed that the rules regarding the distribution of the backward class scholarships had not given entire satisfaction and that there were complaints. He pointed out that the principles of territorial distribution of the scholarships and appropriation of lapses were contained in G. O. No. 11767-70—Edn. 47-17-135, dated the 31st May 1921. He then read the portions of the order relating to the subject.

He said that according to the original rules, allotments for the scholarships were distributed among the various districts and taluks with reference to the total population of the backward classes in each area concerned, the number of scholarships so allotted to each area being again sub-divided among the various backward communities in that district in proportion to their population. In the rules as revised the scholarships were first allotted to the different communities according to their total population in the State. The scholarships so allotted to each community are then distributed among the several districts and taluks on the basis of the total attendance of pupils of that community in the previous year in each unit area.

If any scholarship remained unutilised, it would first be granted to pupils of the same community in the same grade in other districts, failing which, it would be distributed to pupils of the same community in the lower grades in the district to which it was originally allotted and the distribution confined to that one district only. If there were any lapses still, the amount might be given for supply of books, slates and other school requisites to the poor pupils of the same community.

The Chairman further added that in actual practice the Department found it difficult to obtain statistics of the attendance of the various communities in a particular year in time for allotting scholarships in the next year to the several districts and with a

view to get over that difficulty the previous Inspector-General of Education Mr. C. R. Reddy sent up two alternative proposals to Government, one to adopt the same figures for districtwar allotments for a period of three years and the other to make allotments each year according to the requirements of that year and not on the basis of the previous year's attendance. It is on these proposals that Government want the opinion of the Board. He said that the present Inspector-General of Education proposed instead that the figures of the "previous year but one" be made the basis for districtwar allotments. He also pointed out that the present rules regarding redistribution of lapses were also complex and difficult to work out in practice and suggested that subject also might be considered.

The Inspector-General of Education said that the existing rules could be worked out effectually with some little arrangement for getting the necessary information in time and that if any change was necessary, it would be enough to make a slight alteration in paragraph 3 of rule iv so as to make the allotment among the districts depend on the number of pupils of each community in each grade in the previous year "but one" in each area instead of on the figures of the previous year. He no doubt, anticipated some little difficulty at the beginning, but he thought that the existing rules might be operated with this slight change.

He added that no special effort had been made to work out the present rules, and wished to make some special arrangements and work out the present rules at least for a year before he would advocate any change in the rules.

Resolved that Mr. Balasundaram Iyer's proposal might be approved and that the Department might try to work the present scheme and submit a report at the end of the year on the alterations, if any, required in the rules.

II. Procedure to be adopted in respect of local contributions for educational buildings. Letters Nos. 320, Education 9-21-2 and 740 Education 9-21, dated the 29th July 1921 and 15th August 1921, from the Secretary to Government, Departments of Education and Agriculture.

The Chairman remarked that in the earlier days of the Economic Conference the Economic Superintendents went round to the villages, received contributions from them on the promise that they would construct school-buildings from the contributions. There were a large number of such deposits made, and the Government are not in a position to construct buildings in all these cases and nothing further has yet been done in respect of most of these deposits. The question has now risen how to deal with these deposits already received as well as how to regulate these deposits in future. The questions were referred to the Board, which referred it to the Sub-Committee, and the Sub-Committee have suggested simplification of the procedure in respect of contribution in future but they have not dealt with the case of contributions already received.

Mr. Chandy suggested that it would rather be not fair on the part of Government to evade the responsibility already taken by the Government officers, and that they might be asked not to take such responsibility in future.

The Chairman explained that according to the orders on the Education Memorandum Aided Schools in villages with a population of 500, of three years' standing and which have an average attendance of 30 pupils will be converted to Government schools.

and in these cases it is laid down that villagers should pay contribution where there is no building already. The places from which these contributions were received in the past may not have such population and the proposals in the Order on the Education Memorandum do not refer to the sanction of Government grants for buildings in cases of villages which do not satisfy the above conditions but which have already paid a contribution.

The Inspector-General of Education quoted an instance and said that at Pattabelli in Malur Taluk where there is a population of about 200, a grant was given, and a building has also been erected after accepting a contribution from the villagers but as there was no school, the people were urging for one.

The Chairman said that it was not possible to open new primary schools under the orders on the Education Memorandum. He stated that since the Government officers, under the orders of Government, had accepted the contributions by giving promises, he wished that something ought to be done in respect of the schools for which contributions were received as the contributions could not be refunded being collected out of small subscriptions from several persons.

The Inspector-General of Education said that it was the mistake of the officers to have accepted the contributions without a programme being prescribed by the Department. He said that two classes of cases had to be considered, namely, those which had schools and had paid contribution and also those which paid contribution in anticipation of starting schools. The latter cases, however, might be fewer.

The Chairman said that where there was a school conducted on the grant-in-aid system, there was no difficulty at all as a grant might be given and a building constructed or the money used for an endowment. In cases where there are no schools, and contribution was received, the Government should start grant-in-aid schools.

Mr. Ranga Iyengar wanted to know whether these contributions would be treated as deposits, and if so, what interest they would carry.

The Chairman said that the deposits might be treated as charitable endowments.

After some further discussion, the following resolutions were recorded :—

(a) Contributions to be recovered in future should be restricted as proposed by the Sub-Committee to cases of schools selected for conversion to Government schools under the orders on the Education Memorandum in which such contributions are called for by the Department. The procedure may be simplified as recommended by the Sub-Committee.

(b) Contributions already received during the past few years may be disposed of as follows :—

(i) In the case of the larger villages which may be selected for conversion under the orders on the Education Memorandum, the contributions may be utilized along with the corresponding Government grants towards the construction of buildings.

(ii) In the case of the smaller villages the contributions received for the construction of buildings may, with the consent of the villagers, be utilized towards an endowment for the maintenance of the aided schools in lieu of the villagers' contribution for the pay of the school master, the contribution already paid being supplemented to the extent necessary.

(iii) In cases where contributions have been received from villagers which have not even an aided school, an aided school may be started by trans-

ferring the provision made for aided schools which are in a languishing state and the contribution received disposed of as in (ii) above.

(iv) On the endowments referred to in (ii) and (iii) above, interest as a charitable endowment at 6 per cent may be allowed.

III. Recommendations of the Sub-Committee for Miscellaneous subjects regarding Educational endowments.

(a) Endowments for the maintenance of Village Aided Elementary schools.

The resolution of the Sub-Committee was read and the Chairman pointed out that this principle was already accepted by the Board in regard to the building contributions. But the points, viz., how to get these endowments, and who should collect them, etc., were not considered by the Sub-Committee.

Mr. Ranga Iyengar said that the Inspector-General of Education might arrange for this.

The Chairman said that it might be left to the Secretary, Economic Development Board, to do this work through the District Boards.

Mr. Subbiah was also of the same opinion.

Resolved that the following recommendations of the Sub-Committee on the above subject be approved:—

Resolved that the proposals be recommended for adoption as an experimental measure. The Sub-Committee are also of opinion that with a view to avoid an apparent and invidious difference between the cases of villages which offer a building contribution for the conversion of their school to a Government school and others which are invited to offer a contribution as an endowment for maintenance without a near prospect of the school being converted, the following suggestions be recommended to the Board :—

(1) That the contribution towards an endowment be treated as a building contribution when the aided school is eventually converted into a Government institution.

(2) That the Department may offer help to secure suitable teachers in consideration of the assured local contribution.

(3) That subject to the other conditions for conversion to Government schools set forth in the orders on the Memorandum, the schools which furnish these endowments be given preference in the matter of such conversion according to the priority and magnitude of the contribution.

(c) Endowments of immovable property for educational purposes.

The Chairman invited discussion as to whether the endowments of immovable property for educational purposes might not be accepted on the lines recommended by the Sub-Committee.

Mr. Shama Rao suggested that the immovable properties might be sold, and the money realized deposited in Banks for convenience of administration.

The Inspector-General of Education pointed out that there is a likelihood of applications for *gomal* lands being made on the promise that half the land would be given as an endowment, etc., and the question will arise how to dispose of such cases.

The Chairman replied that such cases ought certainly to be rejected. He also suggested that an official trustee might be appointed for this purpose as at present there was no arrangement for availing ourselves of the endowments in landed property for schools or other educational purposes where the properties are valuable also.

The Inspector-General of Education wanted to

know which Department should be responsible for looking after the lands.

The Chairman explained that when it became the property of the Government the revenue authorities would take care of the lands. On the other hand there was no guarantee for its proper management or even safety if it was entrusted to a private individual. He anticipated no difficulty and said that it required only efficiency whichever department was entrusted with such management.

Mr. Shama Rao thought it would not be possible for Government Officers to manage such endowments.

The Chairman replied that when endowments were being managed by private bodies and persons, there should be no difficulty in the Government managing the same. There will be greater safety if the property is in the hands of the Government.

Father Tabard suggested that the endowments might be converted into cash.

The Chairman replied that donors wanted generally to associate their names or the names of the persons dear to them with the property and made a gift of or devised the same in order to perpetuate that association and if the property were to be invariably converted into cash, one of the great incentives for gifts of the kind would be taken away.

Mr. S. R. Balakrishna Rao and Mr. Narasimhachar were of opinion that endowments may be accepted for sometime to come instead of refusing them and that they must be managed by Government as there was no doubt greater guarantee under State management.

Mr. Shama Rao gave an instance in which Hyder Ali gave some endowments. The property was leased out, and gradually became the property of the family and it was impossible to oust them from it.

The Chairman said that the instance he was referring to was of the dark ages. He said that there was a cry everywhere in British India that the endowments were not properly managed. He said that in the absence of any arrangements, if the Inspector-General of Education is given an officer to manage these, surely the endowments might not pass many hands.

Mr. Kongadiappa said that a Committee might be formed in districts to manage the endowments.

Mr. Anantaiya said that if endowments were converted into cash, the money might be given to the Education Department.

After some discussion, it was *resolved* that a recommendation may be sent to Government to permit the endowment of immovable properties for educational purposes where the Government is satisfied about the title to the property and its yielding a large income and that the management of these properties may be entrusted either to the Muzrai Department or to an officer attached to the Education Department.

ENDOWMENTS FOR SCHOLARSHIPS.

The Chairman explained that the proposal was to encourage private enterprise in founding scholarships by offering suitable grants and that in his view that seemed to be the better way to institute scholarships than the present one of Government meeting the entire cost. The provisions of the Madras Grant-in-Aid Code were also referred to.

Resolved that in case of endowments in money not exceeding certain limits to be fixed, a grant equal to half of the amount endowed may be given and that in the case of endowments in immovable property, an annual grant equal to the income may be given.

IV. Recommendations of the Sub-Committee for

Miscellaneous subjects. (Meeting 28-8-1921.) Appendix F.

(i) Teacher's Studentships.

Resolved that the proposals regarding the institution of Teachers' Studentships be recommended to Government with the following alterations:—

(1) Rule iii. Substitute "one year" in place of "two years."

(2) Rule iv. delete the words "a stipend of Rs. 50 in addition to."

(ii) Fee Concessions.

The Chairman recommended that where a parent has been sending more than one child to school, the other children be charged half fee provided they attend the same institution.

Mr. Shama Rao also urged for some concession being shown to relieve persons with small incomes but who have large families.

Mr. Anantaiya proposed that a limit of the pay of the parents for this concession be Rs. 100 in the Cities of Bangalore and Mysore and Rs. 50 in other places.

It was *resolved* that the above proposals be adopted tentatively and the financial effects of this concession ascertained from the Education Department.

V. Recommendations of the Sub-Committee for Technical Education regarding education of men in the Mysore Army.

The Chairman read the recommendations of the Sub-Committee and enquired whether all the men in the regiments were illiterate.

The Inspector-General of Education pointed out that about 200 were literate out of 500.

The Chairman suggested that it would be better to consult the Chief Commandant on the question before it is taken up for consideration.

VI. Recommendations of the Sub-Committee for Women's Education. (Meeting dated 31-8-1921) regarding revision of the Curricula of the Girls' Schools.

Mr. Balakrishna Rao thought that it would be better to have more women on the Committee before taking up the question for discussion, *that is*, it should be a fully representative Committee.

The Chairman requested Mrs. Srirangamma to suggest some names.

Mrs. Srirangamma pointed out that some of the lady graduates, *e.g.*, Sri Nagamma, and Miss White might be selected and that would be desirable to have more ladies when the subject was discussed.

The Inspector-General of Education proposed that another ladies Sub-Committee may be appointed to consider the subject.

The Chairman remarked that there was no necessity for another ladies sub-committee and that the ladies interested in this subject might attend and also pointed out that the present members of the Sub-Committee were competent to give an opinion.

T. G. RAMA IYER,

Secretary.

M. HUMZA HUSSAIN,

Chairman.

U. P. Board of Industries.

A meeting of the Board of Industries was held at Cawnpore on the 27th February 1922.

(1) The Board resolved to adhere to its former opinion that the establishment of an Industrial Bank in the province is desirable, but that the immediate requirements of the situation may be met by the creation of a Loan Commission to administer financial assistance on behalf of the Government, as suggested by the Sir Thomas Smith Committee and that the question of the establishment of an Industrial Bank

should be re-examined after a year's trial. Also that co-operative Societies of cottage industrialists should not be debarred from the benefits of the proposed Loan Commission Scheme.

(2) The report of the Committee on Weaving Schools was considered. The Director of Industries' proposals based mainly on the said report and embodying the findings and recommendations of the Committee, were recommended to Government. The proposal of one of the Committee's members for the establishment by Government of a model hand-loom factory was not approved.

(3) The Board elected Messrs. Sri Ram Khanna and Varshani to serve as its representatives on the proposed Advisory Committee of the Cawnpore Technological Institute.

(4) It was resolved to make a grant of Rs. 3,500 (out of the allotment of Rs. 15,000 placed at the Board's disposal) to Munshi Fida Ali for installing an experimental polishing and plating plant for developing Muradabad-ware.

(5) The application of the Allahabad Brush Co., Ltd., for a loan of Rs. 25,000 for buying machinery was recommended to the proposed Board of Industrial Loan Commissioners.

(6) The continuance of a grant-in-aid of Rs. 40 per mensem to the London Mission Girls' School, Almora, was recommended.

(7) The grant-in-aid scheme worked out by the Director — its principles and details — was approved.

(8) In view of the difficulties which the Arya Samaj Orphanage, Bareilly, has been experiencing on account of non-co-operation and the attenuation of private charity, it was resolved to make it a further grant-in-aid of two sewing and two hosiery machines.

(9) On a motion by Babu Chhail Bihari Kapoor Sahib, M.L.C., seconded by Messrs. Maqbul Husain and A. P. Sen, the Board unanimously resolved to record as follows:—

"This Board notes with regret that certain allegations have been made by some critics to the effect that the Board's meetings proceedings are rushed, members are not allowed ample opportunity for stating their views, and the decisions are not correctly recorded.

And strongly repudiates these allegations and considers them to be entirely devoid of foundation."

S. P. SHAH, I.C.S.,

Cawnpore, 27-2-1922.

Secretary,

Board of Industries, U.P.

South African Board of Trade and Industries.

In July last the Union Government of South Africa set up a Board of Trade and Industries whose principal duty it would be to give a continuously close study to questions of trade and tariffs. There is in existence a Board of Industry and Science, created some five years earlier, but no department has previously been charged with trade and commerce by name. The Acting Prime Minister, who gave an address at the first meeting of the new Board, explained that the Customs Department looked after the tariff, but trade, as such, was not specifically referred to in any existing portfolio. During the war, when they had to regulate imports and exports, the Department of Industries developed into a fairly substantial department of State. That, however, was a war measure, and when the war was over the business slackened off, and the control of exports was transferred to the Customs Department, which now administers that class of work. At the same time they felt that with their increased exports, and with ex-

port trade questions assuming larger and larger importance, the necessity has arisen for giving "trade" more direct expression in a Government Department. They had their Trade Commissioner who worked under the High Commissioner in London. The Trade Commissioner, Mr. Canham, was an officer of the Treasury Department, but he worked very largely under the Department of Industries. Such investigations as had been made in regard to foreign markets had been made by the Industries Department. What he wished to be recognised now was that trade and trade considerations were the functions of this Board. The general question of industry as a whole would be left to the Board of Industry and Science. The new Board would have to concentrate on existing industries and their development, and also on those possible industries which give promise of development. The main function would be to deal with specific cases affecting individual industries which were brought to its notice from time to time. It would not be the new Board's function to deal with general principles affecting industrial development, but rather to direct attention to specific cases.

DUTIES OF THE BOARD.

The September issue of the *South African Journal of Industries*, issued under the authority of the Minister for Mines and Industries, officially sets forth as follows the duties of the Board:—

(a) To hear and examine complaints or recommendations which may be made as to the working of the Customs and Excise Tariffs.

(b) To advise the Government in regard to —

(i) the recasting of the Customs Tariff, and the adjustment of anomalies which may from time to time occur in these tariffs;

(ii) such action as may be necessary or advisable for assisting and developing the industries of the Union; and

(iii) such other matters as the Government may refer to the Board for its consideration and advice.

In considering the matters referred to it, the Board will examine and report upon the following so far as applicable:—

(a) The cost of raw materials in the Union and elsewhere and the cost of the transportation of the same from place of production to the place of use or consumption.

(b) The cost of production of the finished article in the Union as compared with elsewhere.

(c) The cost of transportation of the finished articles from the place of production to the place of use or consumption, whether in the Union or elsewhere.

(d) The cost, efficiency, and conditions of labour in the Union or elsewhere.

(e) The price received by producers, manufacturers, wholesale dealers, distributors, and retailers in the Union or elsewhere.

(f) The tariff, fiscal and other conditions and factors which affect and enter into the cost of production and the price to the consumer.

(g) The effect of trusts and combines or other organizations producing or dealing with raw materials or manufactured goods.

(h) Generally, all conditions affecting production, manufacture, cost and price in the Union as compared with other countries.

(i) The development of markets in the Union and neighbouring territories, and overseas, for the raw materials and manufactured products of the Union.

(j) And, in every case, the effect which any action recommended would have upon the interests of the consumer in the Union.

THE DEVELOPMENT OF INDUSTRIES.

The Acting Prime Minister, in his address, went on to explain the intention of the Government and the meaning of the terms of reference detailed above. They were, he said, very comprehensive, and the basic principle in them was the development of industries. In constituting the Board they definitely accept the principle that industries were necessary for the development of the country: they definitely adopted the policy of working up the raw materials in the country if, in particular cases, that could be done. He did not say that they would relax their efforts to produce primary products; that was a matter to be encouraged in every way. When they did that and started exporting, they came into competition with world conditions. They were not out for a policy of protection at any price. They must be reasonable, and must bear the consumer in mind. But in coming to any conclusions the Board must look at the issues from the point of view of the manufacturer and of the consumer also. It must emphasise the practical side of a practical board. It should avoid as much as lay in its power—he would almost say at any price—minority reports. If the Board was to be of any use to Government and to the country it must conceive of its duties almost in the sense of a Cabinet. It must thrash out its points until it could come to some reasonable recommendation. Compromise would no doubt be necessary, but the Government wanted reasonable recommendations, even if they involved compromise, rather than have minority reports. They wanted to be able to go to Parliament with recommendations that would carry weight. What they looked for from this Board was definite recommendations, not general opinions.

MEMBERS AND ASSESSORS.

The Board has been appointed for a period of three years, and is composed of the following gentlemen:—

Sir Edmond Howard Lacam Gorges, K.C.M.G., M.V.C., as Chairman;

William Arthur Caldecott, D.Sc.;

Henry Eardley Stephen Fremantle, M.A.;

Walter Marshall;

Johannes Adriaan Neser, J.P.;

William Fleming McMullen, of the Industries Division, Department of Mines and Industries, as Secretary.

The following gentlemen have been appointed assessors to the Board:—

Hendrik Johannes van der Bijl, M.A., Ph.D., Scientific and Technical Adviser to the Industries Division, Department of Mines and Industries;

Gilbert Owen Smith, Commissioner of Customs and Excise;

William James Kinlay Skillicorn, Rates Assistant, General Manager's Staff, Railways and Harbours Administration.

Topics in the Journals.

(February 1922.)

Calcutta Review.—Indian Exchange in 1920 and Its Lessons—by B. Ramachandra Rao.

The Educational Review (Madras).—The Oosmania University.—An appreciation—By Rai Bahadur Gnandranath Chakravarti, M.A., LL.B., Vice-Chancellor, Lucknow University.

Industrial Canada.—Canada's resources for phosphate Fertilizer.

Journal of Indian Industries and Labour.—The Third International Labour Conference, by A.G.Clow, I.C.S.

Hire Purchase System.

The following Order No. L. 3762-3—A. & E 124-21-2, Dated 29th December 1921 has been issued by the Mysore Government:—

The rate of interest in the case of money due on account of implements issued under the Hire Purchase System will in future be raised from 5 to 7 per cent in ordinary cases, the rate of penal interests on outstandings which are overdue being 9 per cent.... The enhanced rate will have effect in the case of loans issued after the date of the Order and not those already sanctioned but falling due after the said date.

Mysore Foreign Scholarships.

The following Order (No. 3053-103—Edn. 17-21-21, dated 7th February 1922) has been issued by the Mysore Government:—

In the course of discussion of the Budget during the Birthday Session of the Representative Assembly in June 1921, a representation was made that a sum of about one lakh of rupees was being spent on account of foreign scholarships every year and that in future such scholarships may be granted only by way of loan.

As a certain number of Damodar Doss free scholarships will be available every year the Government consider that in view of the present financial stringency, the large amount devoted towards the grant of foreign scholarships may advantageously be utilized for meeting more obligatory demands. They are accordingly pleased to direct that, until further orders no foreign scholarships debitable to State Funds shall be granted as free scholarships and that all foreign scholarships granted from State Funds shall be treated as loans recoverable under Rule XV of Foreign Scholarships Rules. The Government Order of 25th May 1920 will be modified accordingly.

Worlds' Population.

A London Correspondent writes to a contemporary:—Among the problems fit for discussion by the Washington Conference is that urged upon its attention by Dr. Ritter, Director of the Scripps Institute for Biological Research, California, namely preparation for the study of the world's population, fifty-four per cent of which, he reminds us, lives in the Indo-Pacific area, on about 25 per cent of the earth's land surface, and the remaining 46 per cent. lives in the Atlantic area, on about 75 per cent of the earth's land surface. "From the density of the Asiatic population, from the type of their culture, from the higher standards of living, and the facility of communication and travel, the tendencies of these people to overflow into all the meagrely populated lands of the Indo-Pacific area, which are similar to those they have been accustomed to for a score of centuries, is bound to be tremendous. These facts, coupled with the fact that no more vacant or heathen lands remain for their migration, and with the fact that both the Orientals and the Occidentals primarily concerned are highly but differently civilized, a momentous truth gradually takes shape in our minds that the instinct of self-preservation is here developing a problem, some of the elements of which have never before confronted mankind." If such problems as these are carefully studied, and their implications are honestly accepted, there is an increased probability of peaceful relations and the removal of misapprehensions and suspicions between the nations and races concerned.



Books in Brief.



SHORT REVIEWS OF RECENT BOOKS.

The Human Factor in Business.

By Seebohm Rowntree.—Published by Messrs. Longmans Green & Co., Bombay and London. Price 6s. net

This book by a life-long student of labour and industry does not deal with the basis of industry but with the ideals which industry should set before itself. It places before the world the results obtained by a reputed firm in its own sphere of work, so that the way may be paved for others to solve the problems daily arising in a large factory. As Mr. Rowntree well points out Legislation and Negotiation between Labour and Capital are not the only ways of obtaining an advance in the industrial world. The intelligent employer may himself study the position and recognize the needs of the hour and do the needful. To this class belongs Mr. Rowntree. His book is frankly a description of the way in which the directors of the Cocoa Works, York, have tried to solve some of the human problems of business administration. He deals with the subject under five heads:—Wages, Hours, Economic Security of the workers, Working Conditions, and Joint Control. In each section, he indicates the end the firm had in view, the means by which they tried to achieve it and the extent of its success. If advance in matters of this kind is from the voluntary to the compulsory, then here is something extremely valuable and suggestive. In concluding his book, Mr. Rowntree says:—"I would suggest that industry should be regarded not primarily as a means of promoting the material welfare of groups or individuals, but as a great national service endeavouring to realize three ideals. These are:—(1) Industry should create goods or provide services of such kinds, and in such measure, as may be beneficial to the community. (2) In the process of wealth production, industry should pay the greatest possible regard to the general welfare of the community, and pursue no policy detrimental to it. (3) Industry should distribute the wealth produced in such a manner as will best serve the highest ends of the community."

Indian Currency and Exchange.

By R. C. Mahindra, B.A. (Cantab.). Published by S. Ganesan, Publisher, Triplicane, Madras, S.E., Rs. 3—8—0.

This is a timely book. It deals with flashes of brilliance with the main topics of currency and exchange—Stability of exchange, Gold Standard Reserve, and Elasticity in currency. Mr. Dalal's Minority Report conclusions, and a comparative Summary of the Reports of the two Currency Committees of 1911 and 1914 are given as appendices. These enhance the value of the publication.

Wealth and Work.

By G. W. Gough, M.A. Published by Messrs. Philip & Son, Limited.

This is an interesting work on Economics written with a purpose. That purpose is to make people learn Economics without making them feel that they

are doing so. Mr. Gough's book is exceedingly well done. We have nothing but praise for it. It deserves attention in this country at the hands of the various Text-Book Committees. The book is a suitable one for students of all ages.

Local Self-Government in Ancient India.

By Radhakumud Mookerji, M.A., Ph.D., Professor of History, Mysore University. The Clarendon Press, Oxford.

That a second edition should have been called of this book within two years of the publication of the first, shows not only its worth but also its popularity. Mr. Mookerji has carefully revised the book and enlarged it as well. In a fresh preface to this Edition, he answers some of his critics. But we think this work is one of supererogation. Every thing said or done has a critic now-a-days. Mr. Mookerji stands or falls with his original authorities, and the critics' work is with these and not with Mr. Mookerji. All the same Mr. Mookerji sets up a warm and spirited defence of his position. Good wine needs no bush; nor does a good book require much praise. Mr. Mookerji's work popularises the knowledge buried in Archaeological and Epigraphical reports and is of more than topical interest. We have no doubt it will be widely welcomed in its present form.

Indian Administration, 1765—1920.

By B. K. Thakore, Professor of History and Political Economy, Deccan College, Poona. Messrs. Taraporewalla, Sons & Co., Fort, Bombay, Price Rs. 4 nett.

This work is devoted to the development of Indian administration up to the dawn of Responsible Government. Mr. Thakore has done his work, with discriminating care and skill. The historical side is used to indicate the development of the Constitution. The authorities are carefully sifted and the views expressed are well balanced and fully authenticated by first hand evidence. Withal, the book is not a dry-as-dust compilation. Far from being that, it is a first hand study and is written in a scholarly fashion. To students of Indian Constitutional History, it ought to prove highly useful. To those who wish to get a general and clear grasp of the working of the Indian Constitution of to-day, we cannot recommend a better book than this. It is both handy and cheap for the mass of first hand information contained in it.

Mahadaji Scindia.

By M. W. Burway, B.A., Secretary, Foreign Office, (Special Branch), Indore State, Price Rs. 5.

Those who have read Mr. Keene's Madhava Rao Scindia, this book will prove an excellent corrective. Mr. Burway's account is based on original papers and authorities and is not a partisan account in any sense of the term. His present work, by the way, gives a far truer picture of not only Scindia but also of Nana Pharnavis, the great Mahratta Minister. This book deserves praise because it is a laudable desire to correct a wholly one-sided estimate of a great historical figure.

Business Prospects Year Book.

The 1922 edition of this well-known year book has just been published, and in view of the perplexing conditions of trade, business men will turn with great interest to the careful analysis which is made of the position of the various industries reviewed and the forecasts that are given of the probable trend of events next year. As in previous years, a good deal of space is devoted to the coal, and iron and steel industries. The book contains a wealth of statistics skilfully arranged, and although the opinions expressed may not always command universal acceptance, the facts upon which they are based are clearly set out, and the information cannot fail to be of great service to business men and investors. With respect to the coal trade, the view expressed is that the surplus productive capacity will be ample to cope with the increased demand, supply being still in excess of demand and prices remaining at low figures. A hopeful view is taken of the iron and steel trade, in which foreign competition will be less disturbing. The world's requirements must sooner or later be translated into orders, and when that time arrives the industry will enter a period of prosperity such as it has never known. Other sections of industry dealt with are shipping, tin, tinplates, and galvanized sheets, wheat, oil, rubber, copper, and in regard to the money market, lower rates are prophesied. No further appreciable decline in wholesale prices of commodities is expected, and the writer looks for little, if any, reduction in taxation. The year book is published by the Business Statistics Co., Limited, Cardiff, at the price of 10s. net.

Mysore Coffee for the English Market.

Under the above title, Mr. E. W. Rutherford, the well-known Hassan Coffee Planter, has written an instructive treatise which is being distributed by the *Planters' Chronicle*, free of charge to those interested. Perhaps, the best idea of the aims and object of Mr. Rutherford's work can be gained from a perusal of the preface, which is supplied by Mr. R. D. Anstead, who writes:

The pages of the Books of Proceedings of Meetings of the United Planters' Association of Southern India reveal the fact that, as long ago as 1899, the question of the deterioration of South Indian Coffee was being discussed, and various reasons have been given for this from time to time. Some of these reasons can only be described as fanciful, so all coffee planters will welcome Mr. Rutherford's carefully written pamphlet on the subject, laying his finger on what is undoubtedly a weak place in the preparation of Coffee in South India, namely, the estate drying of the bean before it reaches the coast curer.

My own opinion is that a lot of the trouble is caused by mixing ripe and unripe berries before they are pulped, and that a great improvement in evenness and quality could be obtained by a preliminary grading of the cherry before pulping. In this connection it is of great importance to keep coffee harvested from poor patches separate from that harvested from the good coffee. Almost every estate has some patches of coffee which are poor for one reason or another, due to bad drainage, bad soil, attacks of root disease, and so on; and these patches of unhealthy bushes naturally give a product which is below standard and which ripens unevenly. This should be dealt

with separately, as if mixed with the main crop it may spoil the whole batch.

I am in entire agreement with the author about the importance of even drying on the estate, and on this account, am in favour of mechanical drying machinery which not only produces an evenly dried crop, but also saves labour, a factor of annually increasing importance on estates.

The vagaries of the London market have a certain effect upon this question of quality, since quality cannot unfortunately be defined by means of an analytically determinable figure, such for instance, as caffeine content. Coffee is judged and bought on its colour and liquoring properties, both more or less arbitrary standards, and open to the vagaries of personal opinion. The consequence is that so called deterioration is apt to be heard about more in years when coffee is plentiful and prices low. Buyers are then able to pick and choose, and some excuse must be given by brokers for disappointing sales. In years of short crop and high prices, it is noticeable that much less is heard about deterioration.

Some interesting figures of prices were given recently in a report on the exports of the Madras Presidency. If the average price of coffee for the years 1898 to 1910 taken as a standard and called 100, then, the relative prices of coffee since that date have been as follows:

1910-11	87.47
1916-17	99.41
1917-18	87.60
1918-19	95.12
1919-20	111.81
1920-21	109.00

I think it will be found that it is in years in which the price falls below the standard of 100 that we hear most about deterioration.

Despite this, however, a great deal can undoubtedly be done by the planter to control the quality of his Coffee and keep it at a high standard of excellence, and thus to a very large extent, neutralise the vagaries of the Market. The information given in this pamphlet will go far to help him to attain this desirable object.

Co-operation at Home and Abroad.

By C. R. Fay. Second Edition. P. S. King & Son, Orchard House, Westminster, London.

Mr. Fay's book is so well-known that the new edition now issued by Messrs. King & Son, deserves but a few words to commend it to Co-operators in India. We have used it always for reference purposes. It is the best and most well-informed book on the subject on our shelf. Whenever we have had occasion to refer to it, we have found it helpful. The new edition contains a supplement dealing with the progress of co-operation in the United Kingdom from 1908 to 1918. The book should be in the hands of every progressive Co-operator in India.

The Economics of Reparation.

By Sir George Paish. Published by the *The Challenge Ltd.*, Arundel Street, Strand, London, W.C.

Sir George Paish was, perhaps, one of the first to draw attention to the question to which he devotes this monograph. His views may be summed up in one sentence:—"It is right and just that Germany should pay what she is capable of paying, but to expect her to bear the whole burden of the war is to expect the impossible." He wants people to face the facts of the situation if the nations are to be saved.



Mainly About Persons.



Linnæus and Others.

Our shoemaker friends note. Who founded the science of Botany? Linnæus, a shoemaker. Who first translated the Bible into Bengali? Carey—a shoemaker. Who established the London *Quarterly Review*? Gifford—a shoemaker. Who started the ragged-school movement? John Pounds—a shoemaker. Who wrote the *Farmer's Boy*? Bloomfield—a shoemaker. Who helped most to draw up the American Declaration of Independence? Sherman—a shoemaker. Who founded the 'Society of Friends'? Jon Fox—a shoemaker. Who did the work of Luther better than he himself? Hans Sachg—a shoemaker. Who among others signed the death sentence of King Charles I? Hewson—a shoemaker. And who inspired Shakespeare grant tragedies? Marlowes—a shoemaker.

Dr. Wilson.

Dr. Norman Maclean, of Edinburgh, describes, in the *Scotsman* his visit to the Home of Washington at Mount Vernon.

"Mount Vernon is a place that invites silence," he writes and so he went alone.

"To-day Mount Vernon is a shrine, and a sky scraping monument dominates Washington. But George Washington learned in his own day the lesson that in *politics there is no gratitude*. The "Father of his Country" did not escape the common fate. He was accused as President of drawing more than his salary, of aping a monarchy; there were hints of the guillotine being needed; until at last the scurrilous attack drove Washington to declare at a Cabinet meeting in 1793 that he would rather be in his grave than in his present position. It is said that at the end he would have preferred to seek reunion with Britain. (An American lecturer was howled down in New York last year for venturing to refer to that.) This at least is sure, that Washington was glad to end his days in the peace of Mount Vernon.

"If this may seem incredible, one has only to think of Venizelos, of Clemenceau, of Woodrow Wilson. There is to-day in Washington a living monument of national ingratitude. Whatever may be thought of many of the acts of Dr. Wilson, at his leaving France to her fate until he won a Presidential election as the man who "kept us out of the war," yet posterity will undoubtedly acclaim him as Lincoln now is acclaimed. It was he who not only dreamed the dream of perpetual peace, but by his unbending will-power forced the nations of Europe to place that dream materialised in the League of Nations, in the forefront of the Treaty of Peace. It is idle to think that coming generations will not place the man who did that among the greatest of the human race. And yet to-day these countrymen can find no words strong enough to express their contempt and dislike. There is no more pathetic figure in all the world.

"A shattered body gains him no respite from abuse. When the broken man drove for the last time from the White House to his private house—

the burden at last laid down—a demonstration organized by the League of Nations Unions cheered him at his gate. They would not go away until he spoke. He was taken to a window, and after saying a few words, he pointed to his throat, in token that he could not further reply to the ovation. History can scarcely parallel that tragedy. But the hosannas will rise in chorus when he is dead. George Washington has now a monument 555 ft. high; a hundred years after this Woodrow Wilson will have monument 666 ft. high! The generation of those who garnish tombs never fails."

"'I tremble for my country,' said President Jefferson, 'when I remember that God is just.'"

Lloyd's.

At the Insurance Institute of London recently Mr. Sydney Boulton, the chairman of Lloyd's, delivered an address on the part that Lloyd's had played in the history of insurance.

Out of the 400 years that insurance had existed in this country, the first 100 years, Mr. Boulton said knew nothing of Lloyd's or of insurance companies. Policies were taken round the City by the merchants' or the shipowners' clerks, or by brokers appointed for the purpose, to the offices of the bankers, merchants, and money lenders scattered over the different parts of the City, who carried on this insurance business in addition to their ordinary avocations. This tedious method of effecting insurance lasted for the hundred years, but during the latter part of the century the necessity for speeding up the process became pressing, and, very opportunely, coffee houses came into vogue about that time. They were used as meeting places for different classes of men; some were the chosen resort of poets, politicians, and actors, while others were frequented by commercial men, and these latter gradually came to be sub-divided, certain of them being identified with special classes of business. Among these was Lloyd's Coffee House.

This was first heard of in 1688. It was then in Tower Street, and four years afterwards moved to Lombard Street. It was specially patronised by shipping men, and a little sheet called *Lloyd News*, first published in 1696, which only ran for six months, showed that it was for shipping men that this coffee house specially catered. Here it was that insurance as a business distinct and separate by itself had its cradle and nursery.

Very little was known of the first proprietor of Lloyd's Coffee House. But it was certain that he died in 1712, eight years before the birth of the first insurance company. This fact was only ascertained a few weeks ago owing to the researches of Colonel St. Quintin, the secretary of Lloyd's Patriotic Fund, who unearthed it from the registers of St. Mary Woolnoth Church. The importance of the discovery was Mr. Boulton remarked, that all the flattering things that had been said as to the literary ability of Edward Lloyd, as the founder of *Lloyd's List*, and so on, were discounted by his having died 14 years before that paper first appeared. But if they

were indebted to him for nothing but his name, that was a priceless gift. It was no exaggeration to say that the name of this humble "coffee man" was more often on the lips of men than any other name in the commercial world. And what a wonderful name it was! It must have some strange fascination about it. It had been appropriated by shipping and insurance companies all over the world without any other ostensible reason than that of its natural charm.

No one probably would be more astonished than Edward Lloyd himself to find that it had been claimed for him that he was the founder of the great institution that now bore his name, but his successors carefully tended the little seedling that he had sown; they made a great feature of shipping intelligence. This ultimately developed into the founding of *Lloyd's List* in 1726. It was the oldest existing newspaper in the world, excepting only the *London Gazette*, and had continued without a breakdown to the present time.

The year 1872 was a terrible year for insurance, when a dull and weary period of 50 years, which Mr. Boulton called the age of temporary decline, reached its lowest point.

The 50 years from 1774 to 1824 might be described as the golden age of marine insurance. Lloyd's reaped most of the enormous profits that were made during that period. The reasons for this prosperity were twofold; first, a monopoly; secondly, the impetus given to insurance by the wars. It was a fact that insurance history war and prosperity had often synchronised, and that peace had been followed by bad times for underwriters.

Lloyd's to-day consisted of 1,096 underwriting members, 94 non-underwriting members, 393 subscribers, 82 associates, and 1,600 substitutes. There were 1,400 agents and sub-agents all over the world, those at the most important places being empowered to settle and pay claims. The premium income for last year was upward of £30,000,000 sterling, of which

£18,000,000 was for marine and £12,000,000 for non-marine. Lloyd's was the largest insurance institution in the world.

M. Clemenceau.

On the second storey of a building at the corner of the Rue Auber and Boulevard Haussmann, Paris, was to be seen lately a long and broad band of white calico, on which was printed: "*L'Echo National* (Fondateur, Georges Clemenceau; Directeur Politique, André Tardieu), paraîtra le 10 janvier." It was the long-awaited announcement of M. Clemenceau's new paper. Its birthday just preceded the legal resumption of the labours of the chamber, and the "Tiger" was generally credited with the intention of initiating in it a vigorous opposition to the policy of M. Briand's Government, now defunct. M. Clemenceau has, in his long career, founded several political journals, of which the most famous are *La Justice*, *L'Aurore*, and *L'Homme Libre* (afterwards *L'Homme Enchaîné*).

Dean Inge.

Mr. Arthur Henderson, M.P., has charged Dean Inge with malevolence in his recent speech, in which he said that the Labour leaders had probably received tempting offers from unfriendly foreign Powers, and that their power was conditional on their continuing to make mischief.

On Saturday a representative of the Press Association saw the Dean, who said: "I have not seen what Mr. Henderson says, and I don't want to."

When offered a cutting containing the charge the Dean said: "No, I won't look at it; I don't want to see it."

"But he says your statement implies that Labour leaders are open to bribery. Do you suggest that?" asked the interviewer.

"I have nothing to say," replied the Dean, "Nothing at all." With this the interview ended.

Pay of Teachers.

P. P. Claxton writes in the *Boston Educational Journal*:—"The teacher is the most important factor in the school. Other things help; but good teachers make good schools under adverse conditions. Poor teachers make only poor schools under the best of conditions. Approximately sixty per cent of all expenditures for public schools in the United States are for the salaries of teachers. The pay of teachers is adequate only when it results in giving to all the schools competent teachers, teachers fitted for their great work by native ability and disposition, by general education, by professional instruction and training, and by experience both in school and in the practical things of life.

Notwithstanding many fine and striking exceptions, good teachers cannot as a rule be had for meagre pay. Men and women of the best native ability, of the personality and character which should be required of all teachers of American children and youth, and of future American citizens, cannot be induced to spend the time and money and energy necessary to gain the preparation they should have for assured success as teachers, and then make teaching their profession for life, for much less than they might earn in other professions and occupations requiring equal ability and preparation and involving about the same amount of work and responsibility. Even if they would do so teachers should not be

expected to live on a lower plane socially and economically than other hard-working men and women.

Neither is it good for the school nor for society that the teachers should live the abnormal life of celibates or of homeless wanderers. Teachers should be normal men and women, living a normal life as good American citizens in a normal way and under such conditions as will enable them to do their work in the best and most effective way, which can be done only when they work happily and joyously, under normal conditions, with reasonable freedom from financial care.

The cheapest thing in the world is a good teacher at any reasonable price. The time and intellect and the life and character of our children are too precious to be wasted and misused by teachers who for any reason are incompetent. The work of the teachers is the most important work done in America. More depends on it than on the work of any other class of men and women. On the way in which it is done depends the happiness of the individual and the wealth and welfare of society, state and nation. Some day we shall learn that the work of the teacher is the most important factor in the production of material wealth; that when we pay good teachers liberally we are only returning to them a small part of the wealth which they by their effective work have made possible.

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Some Impressions of the Co-operative Movement in England.

By Albert J. Saunders, M.A., F.R. Econ. S., American College, Madura.

During a recent visit to Manchester, England, I took the opportunity of making some personal investigations of the co-operative movement in England, and shall pass on some of my impressions to the readers of the "Mysore Economic Journal." Manchester stands intimately connected with much of the economic and industrial history of England. It was the scene of the long activities of Cobden and John Bright, and the Free Trade Hall standing in the heart of the City is a memorial to those stirring days. It is here also that one finds the centre of England's spinning and weaving industry. To fully realize the extent of this great business one has only to take a train or motor car ride in almost any direction from Manchester, and try to count the number of factories en route. There are scores and scores of textile factories employing tens of thousands of operatives, while their raw materials come from and their finished products in both wool and cotton go to all parts of the world. But in addition to these things it should not be forgotten that Manchester and its vicinity is the house of co-operation, and the great importance of this contribution to progress may be appreciated from John Ruskin's statement: "Government and co-operation are in all things the laws of life; anarchy and competition the laws of death."

The great precursor of the movement is without doubt — Robert Owen (1771-1858), and concerning him and his work, G. J. Holyoake has said: thus, by his work and teaching Robert Owen "set men's minds upon the track of co-operation," and helped to lay the foundations of the co-operative movement

and so earned the title "the father of co-operation." It was in 1844 that the real founding of the movement took place. A little group of workers at Rochdale, just close to Manchester, desiring to improve the social condition of themselves and their community resolved to start a co-operative society. There were twenty-eight of them, and their total capital amount only to £28. They have ever since been known as the "Rochdale Pioneers." I paid a visit to Rochdale, and stood for a long time gazing at the little, old building, which was the Pioneers' first store. I asked the officer of the present society who accompanied me if this first store belonged now to the society, and he replied, "No, we would like to get it, but the owners knowing its sentimental value to us have put an almost prohibitive price upon it." I said, "How foreign to the whole spirit of co-operation is their attitude. They presume to make a great profit out of a value which they themselves have had no part whatsoever in creating. Whatever value there is in that old building has been created by the thousands of co-operators all over England, and yet the proprietors wish to appropriate to themselves all that advantage which others have created. This is one of the worst abuses of unearned increment and private property with a social value that I know of." It was a very small stock of butter, sugar, flour, candles, and meal that was offered for sale on the 21st of December 1844, when the shutters were taken down and the door opened, amid the jeers of the assembled lads and the scorn of the curious people. One local grocer prophesied that "the farthing candle would soon burn

out," and said that "a wheelbarrow was sufficiently capacious to remove all the stock."

The phenomenal growth of the movement has proved the faith of the pioneers. In 1844 there were 28 members with a capital of £28. In 1845 the membership of the society numbered 74, while the trade amounted to £710. In 1919, the parent society had a membership of 24,000; its share capital had reached £429,000; and its trade for the year amounted to £779,000. The question naturally arises — what were the principles which inspired these pioneers and what objects did they have which have produced such marvellous results? The first object was to start a retail store, where good quality and correct weight goods might be sold to members, and the "profits" from the sales were to be divided among them, each one receiving a share according to the amount he had spent at the store. Housing conditions in Rochdale were extremely bad; so the second object was "the building, purchasing or erecting of a number of houses in which members who so desired might reside." Another object was to relieve the evils of unemployment and low wages in their community by "the manufacture of such articles as the society determined upon, to provide for the employment of those members who were without employment, or who might be suffering in consequence of repeated reductions in their wages." "A fourth object was the renting or purchasing of an estate or estates of land, to be cultivated by those members of the society who might be out of employment or whose labour might be badly paid." Thus was anticipated even in those early days — Productive co-operation. "The final object — towards which the attainment of these others were but steps — was no less than this — that as soon as practicable this society shall proceed to arrange the powers of production, distribution, education and government; or, in other words to establish a self-supporting home colony of united interests or assist other societies in establishing such colonies." In a word the object of the early co-operators was "unrestricted co-operation on the part of all the members for every purpose of social life."

That these principles have been abundantly justified are proved by the statistics of the co-operative union which I quote from the People's Year Book 1921, page 49:

"In this regard the figures for 1919 are not only expressive but impressive as well, revealing as they do a collective membership exceeding 4,000,000; share and loan capital

to the approximate total of £100,000,000; a collective turnover amounting to £325,000,000; an army of employees mustering 190,000 in round figures, and a wages and salaries bill to the tune of £21,000,000.

"As to the advance in 1919 that is specifically denoted by the increase of 287,000 in membership, the increase of nearly £18,500,000 in share and loan capital; the increase of £76,000,000 (in round figures) in sales; the increase of net surplus by over £4,000,000; and the advance in wages and salaries to the amount of close on £6,230,000.....

"As to the march of the movement since the pre-war year 1913, the increase shown by the comparative figures for the period of 1913-19 are sufficiently indicative, showing as they do that the membership of the Union has increased by 1,170,000, and that share and loan capital has increased by £44,000,000; while the increase in the turn-over amounts to £195,000,000, and the increase in net surplus to over £7,500,000. Co-operative employees furthermore have increased in number by 44,000 and odd and the wages and salaries by £12,500,000 approximately. In other words the membership since 1913 has increased 19 per cent, share and loan capital by 80 per cent, sales by 150 per cent, the net surplus by 53 per cent., the number of employees by 31 per cent, and wages salaries by 147 per cent."

The Census figures of 1920 report the co-operative membership in Great Britain as follows:—

MEMBERSHIP OF CO-OPERATIVE SOCIETIES.

	1921	1911
England and Wales	3,879,146	2,342,484
Scotland	680,165	418,047
Great Britain	4,559,311	2,760,531

Now, to arrive at the full strength of co-operation in Great Britain one must multiply the above total by 4 or 5, as every member probably represents a family of several persons. That will give a grand total of not less than 18,000,000 co-operators out of a total population of 42,767,530, or one person in every three in Great Britain is a co-operator, and this really astonishing growth has been experienced in the short period of 76 years.

As I have already said the movement began with a retail store, but other departments were soon added. First came Producers' Co-operative Societies; then the Co-operative wholesale Society; and then Foreign Trading, Shipping and Banking. It was an eye-opening

experience to visit the palatial central premises of the Co-operative Wholesale Society in Manchester. That great organization owns: Flour Mills, Food Factories, Boot works, Textile Mills, Soap works, Printing works, Clothing factories, Farm and fruit lands, Coal Mines, Tea plantations, Motor works, Steam ships, etc. From such a small beginning, see what a mighty movement has come to spread its influence for good. England is the home of co-operation, but the principle has travelled and is now operating all over the world. It manifests itself differently in different countries according to local needs. As for instance in England, we find distribution has been more largely emphasised; in Germany and other European states it has been credit societies and banking; in Ireland agricultural societies have been greatly successful. India began with credit, but now rightly is developing along the further lines of production and distribution.

I was greatly disappointed in not being able to visit Ireland, as I wished to study at first hand in Dublin and vicinity the Irish application of co-operation. It is common knowledge that the movement under such leaders as Sir Horace Plunkett and others has produced wonderful transformations in the economic and social condition of the peasants of Ireland. The Irish Agricultural Organization Society was established in 1894. This society has, at an expenditure of about a quarter of a million sterling, built up the pioneer farmers' co-operative movement in English speaking countries. The example and success of Ireland have been followed by England, Scotland and Wales and now by the United States of America. It is teaching Irish farmers "Better business" in the most practical of all ways — by getting them to do it, and not merely to take about it. The Irish co-operative movement, as it seems to me, is more in line with the needs of India, and I hope for the time when the India co-operators will take as their motto all through the country — Better Business on the Farm in the work-shop, and in the market place. If India is to compete in the world market, she must produce more and better quality of goods.

It was a great pleasure while in London to meet and have a chat with Mr. H. W. Wolff, whose writings are so well known in India. I wended my way to the Reform Club just near Trafalgar Square and was cordially received by Mr. Wolff. We drew up our chairs before the fire, and spent a very pleasant

half an hour together. Although getting up in years now, Mr. Wolff still takes a deep interest in things Indian and especially all matters co-operative. In the development of co-operation in India, he agreed with me that in addition to the credit societies there must be fostered also enterprise for increasing and bettering production. If India is to be saved from the dislocation and unemployment which may attend the incoming factory system, there must be developed a much better home or cottage industry for the village workers in India, and co-operative societies can be used greatly and efficiently to that end.

I had the privilege also of meeting and hearing Professor Sidney Webb lecture at the London School of Economics. He dealt with the history of the co-operative movement. He and Mrs. Webb are publishing shortly a new study of the Co-operative Movement in England. It promises to be a worthy work. I have placed an order for a copy and when it comes I may offer a book review of it to the Journal.

I enjoyed an interview in Manchester with Professor F. Hall, M.A., Advisor of Studies in connection with co-operative education. This department is doing a fine work along educational lines. The objects of co-operative education are, primarily, the promotion of co-operative character and opinions by teaching the history, theory and principles of the movement, with economics, and industrial and constitutional history in so far as they have bearing on co-operation; and accordingly, though not necessarily of less import, the training of men and women to take part in industrial and social reforms and civic life generally. The syllabus of studies, a copy of which I have, deals with the principles of co-operation, Industrial History, Economics, Citizenship, Sociology and Ethics, Education, Propaganda and Public Speaking, Emergency classes and Technical classes.

That is the kind of educational work that the movement should be undertaking throughout India. I was pleased to see this very thing advocated in the "Bengal, Behar, and Orrissa Co-operative Journal" by Professor Mukherji, M.A. In an article on "Co-operative Education" he makes appreciative reference to the Co-operative College in Manchester and makes a strong plea for the establishment of an All-India Co-operative College and founding of chairs in co-operation at the various Indian universities.

The principle of co-operation in contradistinction to competition has long since past the

experimental stage; it is now firmly established as one of the greatest forces in our modern life. The experience of England points to the fact that India's hope of economic solution must lie in the application of that same principle. Among the many Americans who visited England last summer were a group of economists who expressed their opinion of English co-operation in these words which will bear repeating here:—

“While the external features of the various activities which we saw were in themselves impressive, we were impressed most of all with the fact that the directing genius of the huge business is located — by the democratic choice of the members—in the hands

of the directors, who are themselves workmen, and who conduct its affairs without remuneration after their own day's work is done. England has given to us many valuable suggestions during our summer here, but none of greater importance than is found in the success of the co-operative movement.”

The motto of the movement is a worthy one for India in these new days of political responsibility: “Each for all, and all for each.”

“The real unseen and all we see,
Is pregnant with that happier time
When o'er the earth, and every sea,
“OURS” shall supplant the “MINE” and
“THINE.”

Petroleum in Western Australia.

Positive indications of petroleum in the Kimberleys, in Western Australia, over an area 190 miles long by 100 miles wide, were claimed to have been discovered by a leading geologist upon his recent return to Perth from the north-west, states the “Industrial Australian and Mining Standard”. This expert is the advance guard, so to speak, of the Freney (Kimberley) Oil Expedition, which, accompanied by the Assistant State Mining Engineer, left Perth in April last to conduct a more exhaustive investigation into the report made by Mr. Freney in March as to the discovery of mineral oil indications in that part of the State. The party had spent nearly eight weeks visiting the various points marked on Mr. Freney's map as having yielded results of a highly satisfactory nature. For purposes of identification these points may be said to lie between Mount Wynne and Mount Campbell, the Leopold and St. George's Ranges, and the Fitzroy Crossing and Christmas Creek. Seeing that the area comprehended in the oil license held by Mr. Freney is, roughly speaking, the size of England, it was not possible in the time at the disposal of the party to do much more than inspect and sample the bores, seepages, and springs previously located by Mr. Freney. The opportunity was, however, taken by the Government Geologist of putting down one bore on his own account in the vicinity of one of last year's sinking. This bore was sunk 90 feet, and from a depth of 40 feet downwards the bores were found to be iridescent, a proof that they contained oil. The smell arising from the bore was also strongly of paraffin. Oil seepages are of constant occurrence, and

are noticeable in the first instance because of the absence of any vegetation upon them. Several field tests were made from these seepages, and a residue of solid paraffin was obtained. At Christmas Creek the party took samples of an oil scum found upon the water. At Mount Wynne a quantity of the gas that bubbles up through a hot spring was caught and sealed in glass containers. Altogether samples representing seventeen different tests were taken and sealed by the Government Geologist for analysis by the Government Mineralogist.

It is understood that the Assistant State Mining Engineer is preparing his report and that the document, together with the sealed samples, will shortly be in the hands of the Government.

In some later notes on the subject the “Industrial Australian and Mining Standard” states that from the extreme north to the far south of the State investigations and research work of varying degrees of intensity are going on. It also adds that after concluding a preliminary geological survey of the country adjacent to the seepages, springs, and bores which yielded the samples referred to above, the Geologist proceeded to an area close to the South Australian border, due east from Derby, with the object of making a report upon what is said to be a promising find there. Another Government Geologist, in consequence of statements which have appeared in the press, has been sent off post haste to report upon the position at Bremer Bay, while, according to a recently published prospectus, hopes are entertained of payable oil being found in another part of the south-west,

Indian Fiscal Commission and Mysore.

By P. G. D'Souza, B.A., B.L., Director of Industries, Mysore State.

The subject will be considered firstly as it affects India in general and secondly in regard to its application to Indian States with special reference to the conditions in Mysore. I shall begin by summarizing the general principles bearing on the questions raised and then touch on such special points as might require further elucidation. I have added in an appendix statements giving the statistical information on which my conclusions are based.

THE NEED FOR SPECIAL PROTECTION.

England, though it has attained under a system of unrestricted competition in the home and foreign markets considerable supremacy in trade and manufactures, has latterly found it necessary to modify its policy to a certain extent, when actively opposed by the commercial rivalry of nations that have built up their industrial system on a basis of protection. It is now generally admitted even in England that the doctrine of free trade cannot be accepted without qualification. As far as India is concerned, it cannot be denied that the policy of free trade has been of benefit to it in the past while its capacity for industrial production was latent. Aided by the improvements in communications and facilities for transport, though these are still far from adequate, it has been able to produce and supply in increasing quantities raw materials in great demand in the manufacturing countries of the West. Statistics, however, show that its commerce has increased mainly in two directions, *viz.*, exports of raw materials and imports of manufactured articles, the result being that the bulk of the population has been drawn more and more into the production and extraction of raw materials. Agriculture itself has not undergone much improvement owing to the absence of the impetus which the presence of manufactures would have given to it. In these circumstances, it is of essential importance to provide the people with a greater diversity of occupations in order to impart more economic stability to the country. It is therefore imperative that Indian Commercial policy should, with this view, be directed more and more towards promoting the utilisation of raw materials for manufacturing purposes in India itself and that the tendency towards the increased import of manufactured

articles and the export of raw materials should be checked.

It has been urged with some force that as India now supplies much agricultural product and many raw materials essential for industrial production to other parts of the world, the development of manufactures may to some extent affect the occupations of its rural population and unsettle the market for its products. India's geographical position and resources however render it possible for her to improve her industries without sacrificing the interests of her rural population or her markets, as less than half the labour now employed in agriculture is sufficient with more efficient methods to raise the present agricultural produce, while the commodities it exports are in keen demand in various parts of the world. Moreover, the expansion of industries, over a vast continent like India, with its low level of education and enterprise, being likely to be slow, can be accomplished without affecting agricultural production nor causing any violent economic unsettlement.

The War has shewn how new industries can be developed in India even under a partial protection afforded by the stoppage of imports from other countries. Among other examples, I may mention the manufacture of sandalwood oil, the development of the soap industry in Mysore, manufacture of machinery for the jute and tea industries, caustic soda, thymol, silica bricks, etc. Many of the industries that thus came into existence have already begun to feel the effects of competition from abroad and some of them cannot survive without protection.

Though conditions in India are such that in course of time it may be able to produce most of the commodities required by the people it will not be possible to make it entirely self-dependent in the course of a generation. We should therefore first concentrate on industries for which the country offers the best scope and which are calculated to meet the primary requirements of the people. Infant industries for which the natural resources of the country are best adapted should be immediately chosen for protection until they become able to take root against foreign competition.

PROVIDING FINANCIAL NEEDS.

Progress involves a steady increase of public

expenditure. Even with the utmost retrenchments India's requirements for its growing expenditure will therefore demand the provision of new sources of revenue. It is a well recognized fact that the scope for any further increase in direct taxation in India is very limited and additional taxation has therefore mainly to be derived from indirect taxes such as customs and excise. At present both these duties are imposed for purposes of revenue. Even though, a new principle of protection is now introduced, it will be impossible to divest customs duties of their fiscal character, the only difference being that the protective duties should be first imposed according to the conditions prevailing from time to time, the amount of purely fiscal duties being fixed thereafter.

Protective duties should be levied on the following principles:—

(a) The industry is one that is capable of being established by protection and is either essential to national security or is such that the natural and other resources of India are likely to favour its rapid growth.

(b) As between new industries and established Industries protective duties should be imposed primarily for the development of new industries, but there would be no objection to impose them in connection with established industries where such a measure is necessary in order to organize the industry on a larger scale to provide India with the bulk of its requirements.

(c) It is not desirable to impose such protective duties in the case of agricultural produce used as food stuffs nor is it necessary in India. A small export duty may be levied on cereals and pulses such as wheat, rice, gram, etc., to ensure that only the surplus that remains after satisfying Indian requirements is exported.

(d) Such protective duties should not be applied to any necessities of life unless they can be produced locally so as to meet gradually the bulk of the demand, and any increase in price due to the duties will be only of a temporary character.

(e) The amount to be levied in each case will depend upon the importance of the industry, the difference in the initial cost of manufacture and the manner in which the price of the article imported is fixed. The duties imposed should not be such as would raise the price too high nor give an artificial advantage to a few manufacturers and only the minimum necessary to enable the industry to withstand competition should be levied.

(f) The aim should be to give protection only so long as the industry cannot thrive in the face of foreign competition. The duties should be decreased or removed as soon as the Industry can withstand free competition.

(g) Where the industry is likely to be localized bounties are preferable to protective duties. Such bounties may be given also as protection against dumping.

(h) In the case of articles in which India has more or less a monopoly or it is in a position effectually to control the supply to other countries, such duties may be imposed even on exported articles as they will either fall on the consumer or promote the export of the article only after passing through a process of manufacture.

(i) The power to impose protective duties implies the possession of fiscal autonomy and it would be necessary to allow complete freedom to India in regard to fiscal matters if the duties are to be applied with advantage.

On the principles set forth above the commodities to which protection may be immediately applied will not be numerous but as the manufacturing power of India is gradually developed it may be necessary to vary them from time to time until a stage is reached when India should be able to deal with other advanced countries on equal terms. Among metals, Iron is the most important from the manufacturing point of view and countries that are able to produce it occupy a leading place in manufactures. India possesses ample resources to be able to develop an Iron industry of its own capable of satisfying all its requirements. Though protective duties may raise its price for a time and increase the cost of railway and other projects, yet, the advantages of making India self-dependent in regard to this primary requisite of manufactures are so important that Government is bound to stimulate its production by every possible means, affording it such protection as may be needed for the purpose. The manufacture of sulphuric and other acids, alkalis and fertilisers is of paramount importance to the country and it is necessary to foster their manufacture also by special protective duties. India imports large quantities of material used in building industries such as cement, bricks, tiles, granite and marbles and paints. These articles are now manufactured in India to a certain extent but the production is capable of unlimited increase. All these commodities enjoy indirectly a large amount of protection due to the heavy cost of transport of the imported articles but as they supply many

essential wants no effort should be spared to foster the further development of these industries with due allowance to the factors in their favour. Other articles on which such protective duties may be imposed are cotton, silk, woollen, rubber and leather goods, sugar, glass porcelainware, cutlery, paper pulp and paper, gold thread, matches, chemicals and medicinal drugs that may be locally prepared, oil products that local industries may manufacture including soaps and candles and paints and varnishes.

It would not be easy to foster the development of a country capable of so much foreign trade unless it has a mercantile marine of its own. It is unnecessary to recount the causes that have led to the failure of many previous attempts to encourage indigenous shipping in India or how jealously other countries guard against encroaches into shipping by a system of bounties or penal rates. The creation of an Indian Mercantile Marine has a preponderant claim in regard to facilities to be provided for an all-round development and it should be fostered to the utmost extent possible by bounties and special concessions to goods carried in Indian bottoms.

As has been repeatedly pointed out there is no use in aiming at industrial development if systematic efforts are not made to provide skilled superintendence and efficient labour, to promote technical training and research and supply the people with the necessary help and information for developing industries. Agriculture should also be simultaneously given facilities for improvement and development especially cheap credit. The Co-operative Credit movement has been of great help to the agriculturists but it has its own limitations and a scheme of agricultural finance on a broader basis with some system of Land Mortgage and Agricultural Banks is an urgent necessity and should have a prominent place in the financial machinery of the future. Side by side with the imposition of protective duties therefore, an attempt should be made to improve the powers of production of the country as a whole by greater attention to agricultural development, by educating the people, by promoting technical training, by developing ports, harbours, waterways, railways, means of communication, etc., and encouraging indigenous shipping so that the conditions of production may be brought up gradually to the level of other more advanced countries.

So far as India is concerned, it would be an advantage to it to get all commodities that

it is not able to manufacture, as cheaply as possible and precautions against dumping will be necessary only either when it is aimed at any particular industry already existing or at one that is likely to be established or there is a general plan to prevent the development of, or capture industries which there is a reasonable prospect of developing in India.

For a long time to come hand industries will continue to retain their importance in our national economy. The bulk of the people live in villages and as agriculture cannot provide them all with subsistence these industries are necessary to promote the general well-being. Moreover, they have the same influence as peasant proprietorship in encouraging a feeling of independence and self-respect, and creating a freer life than is to be found in factories. It is therefore necessary to assist these industries as far as possible to maintain themselves in the face of both home and foreign competition. In the case of weaving coarse and very fine counts and silk fabrics and cheap woollen kamblis, experience has shewn that weavers can compete successfully against machine made goods. The removal of excise duties on cotton will prejudicially affect the weavers of low counts for some time. The instability of the industry however is not due so much to the competition of the mills as to inadequate organization and inability to market the articles on the part of weavers. If systematic attention is paid to the improvement of the condition of the weavers and assistance given to them to use improved appliances and to obtain their raw materials and sell the products without the intervention of rapacious middlemen, they will be able easily to stand their ground. In the case of hand industries therefore assistance should be given only to organize the industry efficiently but should not take the form of any bounties direct or indirect.

Having regard to the advantages, India would possess for manufactures under a protective system some of the foreign firms which depend for their custom on the large market the country affords, may be induced to start the industries under the altered conditions here. It would be an advantage for more and more manufactured goods to be produced in the country itself whether by local or foreign agency, but precautions have to be taken where such concerns are established by foreign agency, that their superior combination and resources are not used to crush indigenous enterprise. Industrial development in India requires that the people should

have adequate facilities to obtain training in factories. When these are under foreign control there will be the same difficulty for Indians to secure admission into them to be trained as there is in factories outside India. No special concessions should be usually granted to foreign firms and concessions when given should be carefully watched. As the object is to promote the development of the resources of India in order to increase the earning power of the people it is necessary to place restrictions in the way of concerns that are established merely to exploit the country and encourage them only if they are prepared to assist Indian development by employing a part of the profits in the country and train Indians as far as possible. A rule should be made that in the case of foreign enterprises a percentage of the capital should be raised in India and a certain proportion of the shareholders should be Indians. In the case of concerns formed for developing coal and mineral resources and foreign enterprises for the cultivation of commercial crops on a large scale the grants should be for limited periods, the duration being sufficiently long to allow of an adequate return being obtained from the capital invested. The chances of large trusts or similar capitalistic combinations coming into existence in India even under a system of protection and their being able to control prices to the prejudice of the people seem at present remote and the contingency may for the present, be left out of consideration.

EFFECT OF PROTECTION ON PRICES.

As it is proposed to confine protective duties only to the case of such manufactures as may be established with advantage in India on a sufficiently large scale and the bulk of the export trade consists of raw materials, which other countries cannot be without, the imposition of protective duties on the limited scale proposed is not calculated to affect foreign trade very much while on the other hand the development of its own home market will benefit the country.

Protective duties may temporarily add to the price, but if the industries have been properly selected the advantages of cheaper raw materials and labour charges, savings in transport would lessen the cost of production and the increased employment provided for the people and other gains due to increase of local production would readjust the price to the benefit of the country.

Every country now uses tariffs for retaliatory purposes. With the exception of machinery and manufactured goods of certain classes that could mostly be produced in India, she is very little dependent on foreign countries and the tariffs will give her a decided advantage in developing her commercial policy as she can apply them to raw materials much needed by other countries. Protective duties may now be levied as special tariff on selected articles. In case India has fiscal autonomy, it may be to her advantage to arrange for preference on the principles of the favoured nation treatment.

MYSORE AND TARIFF REFORM.

I have now expressed my general views on a tariff policy for India. Though the country taken as a whole would benefit by a system of protection and the Indian States would get many indirect advantages from such development, their own fiscal interests are however opposed to any increase of indirect taxation in British India that falls on their people without their being able to share in its benefits.

The total amount of imports and export duties including the excise duties on cotton manufacture collected at the British Indian ports has risen from Rs. 689 lakhs in 1908-09 to Rs. 2,826 lakhs in 1920-21 the rise during the last quinquennium having been more than double. Taking the case of Mysore, it has been calculated that the people of the State contribute about Rs. 58 lakhs to the British Customs being the proportionate amount levied on articles consumed in Mysore, which represents roughly about 20 per cent of the total revenue of the State. No share in these Customs is now given to the State though it makes an independent contribution of Rs. 35 lakhs per annum for the protection it receives from the British Government and also other indirect contributions such as profits of currency, etc., amounting to another Rs. 15 lakhs.

At present, it is only States that lie on the seaboard such as, Baroda, Porbunder, Travancore and Cochin or, beyond the limits of British India, *viz.*, Kashmir to which goods are consigned in bond, that participate in Customs. Travancore levies in addition export duties on some of its articles of export such as cocoanuts and their products, tea, pepper, jaggery, arecanut, tamarind and salt-fish, etc.

Most of the States used to levy transit duties which have now been abolished as

detrimental to the free movement of trade. The income from such transit duties used to amount to nearly 10 to 11 lakhs of rupees per annum in Mysore and though some of the articles on which these duties were levied were such that the burden could be shifted to the consumers being produced chiefly in Mysore the duties were abolished in order to remove any possibility of restriction on trade. It has been well pointed out, that, in so far as customs duties, paid by the Indian States which have no opportunities of spending them for the benefit of their subjects, are concerned, they become more or less merely transit duties and conflict with one of the fundamental principles in regard to their incidence, as they are collected from the people who derive no direct benefit from them.

The extraordinary elasticity of the customs revenue has resulted in a steady increase both in the rates of general tariff and duties on selected articles and as this increase is of no direct advantage to most of the States concerned, the growth of revenue from this source which is determined mainly by the needs of the Central Government is viewed with much concern by Indian States in General.

The inability to derive any benefit from indirect taxes naturally handicaps States having a progressive administration in providing funds required for public expenditure. For instance, in Mysore, in addition to a subsidy, where the State makes a further contribution of more than 25 per cent of its revenues indirectly to the various sources of indirect taxation in British India that fall on the people of Mysore, the want of these resources of taxation has greatly embarrassed the State in providing adequate funds to cope with the increasing demands for the discharge of even such essential functions as overcoming the extreme backwardness of the people in agriculture, industries and commerce, spreading education, decreasing death rate, improving sanitation, water-supply, etc. Even though it would be possible for the State to levy export duties on certain articles, which being produced under conditions of special advantage in the State, the tax could be shifted to the consumers in British India and foreign countries, such as, silk, copra, now used chiefly for edible purposes, arecanuts, hides, tanning materials, fruits, minerals, etc., and an import duty on articles of luxury such as tobacco, it has hesitated to adopt the measure as being, surrounded on all sides by British Territory, the people have already to bear their share

of all customs duties in India and such further duties unless there is a certainty that they would be shifted to the consumers might become an additional impost on the people.

The claim of Indian States to a proportionate share of such revenue and the desirability of allowing them to impose separate export and import duties either to meet their own fiscal requirements or for the development of their own industries consistently with the interests of Indian trade as a whole deserves careful consideration and no fiscal reform will be complete unless suitable provision is made to protect the special interests of the Indian States. Even from the point of British Indian interests the policy of imposing a drain on the resources of such States without any corresponding advantages is calculated to react on the development of India as a whole.

Indian States also feel that their development is unnecessarily hampered by their interests being treated as subordinate to British Indian interests real or supposed even in matters pertaining to their own internal development, that they have no influence over fiscal and other policies of the Government of India even when these affect their vital interests and that an all round Indian development is not possible if their special interests are ignored and their co-operation is not enlisted.

The State suffers greatly from its remoteness from good harbours and though the interests of trade in Southern India as a whole will be promoted by the development of a harbour near its frontier, *viz.*, Bhatkal, the scheme has not yet received the necessary support on various considerations. Indian Railway Policy is too narrow and dominated by vested interests to give the needed impetus to the proper development of the country and in the case of the Indian States their interests are altogether ignored. The existing Railway system in the State does not coincide with the natural arteries of trade in the central portion of the southern half of the Peninsula. For instance, a through route between Bombay and Colombo is absolutely necessary which will be provided if the Nanjangud-Erode Section is completed. A connection between Bangalore and Hosur, and Chitaldrug and Rayadurg will join its railway system to the bordering British Districts, while the want of several other lines cuts it off from its natural outlets into the sea. These extensions are opposed by vested interests with the result that the trade is

forced into unsuitable channels leading to much loss. It is needless to dwell on the serious economic waste caused to the State when the bulk of its trade is handled in distant ports over which it has no control and its own merchants are thus deprived of a connection with its own commerce.

Large quantities of chrome, manganese, magnesite, mica asbestos, corundum and other minerals are now exported from the State and though it has the advantage of cheap electric power and can develop an industry in the products yet owing to its fiscal disabilities it has not been able to reduce the export of these raw materials while its unfavourable position in the Railway system has deprived it of a substantial portion of its profits even when the commodities are exported in an unmanufactured state.

So far as Mysore is concerned its interests require recognition in the following respects :—

(1) It should be consulted before any changes in the fiscal policy likely to affect its interests are effected and its industries allowed to participate on equal terms in any policy of protection that may be adopted.

(2) It should be given a share in all customs duties equivalent to the amount levied on commodities consumed in Mysore to enable it to provide the funds needed for creating more facilities for trade by land and sea, and for the development of its resources.

(3) It should be allowed the benefit of all exemption given to British Indian Governments in regard to materials imported for public purposes.

(4) It may levy export duties on commodities of which it enjoys a partial monopoly such as copra, coffee, spices arecanut, silk, hides and skins and tanning materials, forest products, minerals, etc., when such additional taxation is required for its fiscal purposes or for the development of its industries, preference being given to such commodities the imposts on which may be shifted to foreign consumers.

(5) It should also be assisted whenever necessary in the development of an industry for which it is particularly suited by the levy of a general protective duty in case such industry satisfies the general conditions under which such duties are imposed. In addition to commodities it shares with other parts of India it requires special duties on the export of sandal wood for the protection of its Sandalwood Oil Industry and for its manufacture of charcoal pig iron wood distillation products, soap, raw materials for essential

oils, lac, nux vomica and other forest products.

(6) As I have emphasised in more than one place measures for the promotion of industries will not have much effect unless the general conditions that influence the development of industries such as shipping, transport and other facilities are simultaneously improved. The interests of the State should receive full consideration in this respect and its powers for the complete development of all its resources should be absolutely unfettered.

(7) The State should be represented on any body that may be appointed to watch the effects of fiscal policy on industry and trade.

If the claim of Indian States to participate in the customs contributed by them is recognized there should be no difficulty in devising a simple method to levy the duties without inconvenience or loss by any one of the numerous ways suggested for the purpose, *i.e.*, either by a system of sending the goods in bond or of drawbacks or division according to population or in proportion to public revenues or public expenditure. I am in favour of the last method.

ORGANIZATION FOR INVESTIGATION.

If a protective tariff is to be judiciously applied it is absolutely necessary to provide an organization that will study the course of trade, watch the effects of such rates within India and elsewhere and propose the imposition or the abolition of new protective duties as the case may be. The organization may consist of one representative from each of the Chambers of the Imperial Legislative Council, the Chamber of Princes, two representatives of Industries and Commerce at least one of whom should be an Indian selected from the various Presidencies with a special representative from the Commercial capitals such as Bombay, Calcutta and Rangoon and a representative from the important Indian States. For local investigation a smaller organization may be provided in each Presidency which will submit proposals to the Central body.

EXPORT DUTIES.

As regards export duties, the articles have now been mainly selected on account of the full or partial monopoly that India enjoys on account of the demand for such commodities from foreign countries which enables it to levy a tribute from the foreign consumers. The scope for increasing them is limited by the fact that unless confined to the articles for which the demand in other countries is such that it can bear the additional impost

they have a tendency to diminish the volume of trade. I am not therefore in favour of the levy of any protective export duties to any material extent unless it is possible to stimulate the use of the commodity for manufacturing purposes within India and cheapen the articles for Indian customers or force the country using the raw material to use the manufactured article. This would be very difficult, for example, though India exports large quantities of bones and hides that are used largely for manufacture in Europe it is not possible to supplant these industries as they are highly specialized and they require a very high degree of technical skill. It is therefore desirable to continue to levy these duties on the existing principles the largest quantity of tanning materials. It produces raw silk on a large scale. Its forests abound in articles from which valuable fibres or essences or drugs may be extracted. All these may be worked more or less on the principle of partial monopoly I have mentioned above if the supply is properly controlled by mutual agreement between the neighbouring Provincial Governments and Mysore. In my opinion as I have already explained fully in dealing with similar raw materials from Mysore some restriction should be imposed on the export of these commodities as they can be made to lead to the establishment of important industries.

IMPERIAL PREFERENCE.

The weight of opinion appears to be that so long as India does not enjoy fiscal autonomy no scheme of Imperial Preference is likely to be of advantage to it. More than 60 per cent, of the exports of India under normal conditions are taken by countries outside the Empire while India gets nearly 70 per cent. of its imports from the British Empire. Thus India practically buys from foreign countries only what the United Kingdom cannot supply and exports to them what the British Dominions cannot consume. The aim being to develop manufactures in India the conditions are such that England is one of the principal countries against which some measure of protection will have to be devised and India cannot afford a diversion of its trade and thereby run the risk of losing half of its markets by joining in a scheme of preference. In these circumstances as has been rightly pointed out preferential trade will only mean an unnecessary sacrifice of corresponding revenue and enhancement of the price of articles supplied by foreign countries. There is no doubt a great deal to be said in favour

of the ideals regarding the consolidation of the empire and making it self sufficing but owing to the peculiar position of the Indian Government and the people, it is difficult to evolve any scheme in which the sacrifices it will be called upon to make, will not outweigh the advantages. No definite opinion can therefore be expressed unless the details for a scheme of Imperial Preference have been worked out for all the component parts of the Empire including India and it is known to what extent India would be able to adjust its own fiscal system and assert its individuality. The position of the Indian States in such a scheme of Imperial Preference has also to be considered for though it might be to their advantage to have the benefits of the scheme if India joins in it, cases in which their own interests might conflict with the general arrangement would frequently occur and their place in and relations to such a scheme have to be carefully settled.

CONCLUSION.

As I am not directly engaged in manufacture or the export or import business or the retail trade and my knowledge of the conditions is due to my association with the Department and the manufacturers and the business men of the State, I do not propose to enter into further details here. I have in the previous paras referred fully to the Industries in Mysore that need protection and explained how the interests of its trade may be promoted and how the present policy in regard to the imposition of export and import duties in which the State has no share has adversely affected its development.

It is well within the range of possibility that President Harding may see the day when he can sit at ease and talk to every city, town and hamlet in the United States that can be tapped by telephone wires, to an audience of 50,000,000, or, perhaps, 100,000,000. Mr. King, Chief Engineer and Expert on amplifiers, says it will be relatively simple to set up equipment in the capitals of forty-eight States, through which 150,000 persons in each city—a total of 7,200,000 could hear a ceremony in Washington or elsewhere as distinctly as if they were seated within a few yards of the speaker. "Canned" music, too, faces a potential rival if the loud speaker be as simple to connect as Mr. King says, for the stage of the Metropolitan Opera House in New York could be connected up with the nation at large.

Retrenchment in Great Britain.

During the past month there have been published the reports of the British Committee on National Expenditure appointed in August last to make recommendations for effecting all possible reductions in expenditure on supply services, having regard especially to the present and prospective position of the revenue. In May 1921, when it was realized that drastic reduction in expenditure could no longer be delayed, the Treasury issued a circular to Government Departments indicating that the cost of the ordinary supply services, estimated at 603 millions for 1921-22, must be reduced by 113 millions to 490 millions for 1922-23. In response to this circular the Departments submitted provisional estimates for 1922-23 showing in all a saving of 75 millions. This reduction was, however, in many cases due to lower prices and wages, windfalls or the cessation of the special expenditure on services arising out of the war, and therefore did not fully indicate economical administration or curtailment of activity. Afterwards it was desired by the Treasury that the total saving to be aimed at should be 175 millions. The committee then appointed had thus to discover means by which a further reduction of 100 millions could be effected in order to bring down ordinary supply expenditure for 1922-23 to 428 millions.

From the summary presented below of figures given in the three reports of the committee it would appear that expenditure of about 510 millions, representing provisional estimates for 1922-23, was reviewed and that economies suggested by the Committee, together with further revisions in the provisional estimates made by the Departments, amount in the aggregate to 86 $\frac{3}{4}$ millions. In reviewing the expenditure upon the Navy, no account has been taken of a possible reduction as the result of the Washington Conference, but the Committee feel confident that the balance of 13 $\frac{1}{4}$ millions required to make up the requisite 100 millions can be realized by a curtailment of naval expenditure as a result of the Conference and under the heading of oil stocks and storage, as well of military expenditure by a modification of foreign garrison arrangements.

The Committee are careful to point out that their terms of reference permitted them to indicate economies which might be effected if particular policies were adopted, abandoned or modified, but that they have endeavoured

to encroach as little as possible on questions of policy in making their definite recommendations, recognizing that, as stated in the terms of reference, these would remain for the exclusive consideration of the Cabinet.

The Committee believe that the reductions in expenditure which they have proposed are attainable if prompt action be taken by the Departments upon the general lines of the suggestions and with determination to effect economies. In the conclusion attached to their final report the Committee state that they have no doubt whatsoever that a close scrutiny of expenditure by the Departments themselves and by the Treasury will disclose the possibility of still further economies. They point out that in May last the Treasury laid down that Departments should base their estimates upon a standard cost of living figure for 1922-23 of 100 per cent above the pre-war level. As the figure has already fallen considerably below this standard and the cost of materials has also declined from that date, the Committee consider that there may be a margin of further saving in sight taking the estimates as a whole.

The first report deals with the fighting services, social services such as education and health, and the Ministry of pensions. It is suggested that a reduction of 21 millions be effected in the Navy estimates for 1922-23, 20 millions in the army estimates and 52 millions in those for the Royal Air Force. These economies it is suggested may be effected mainly by cutting down man-power and costly educational expenditure and do not take account of any decrease in pay and allowances which the Government may decide to make, or of possible further reductions resulting from a review by the Government of military requirements at home and abroad. Moreover, the recommendations for the Navy exclude savings resulting from the Washington Conference and any possible reduction in the number of capital and other ships in full or partial commission. The Committee are of opinion that full economy in the fighting services can be effected only by co-ordinating them under a Ministry of Defence, thus eliminating duplication and overlapping.

The saving on the 1921-22 expenditure suggested by Departments concerned with the social services was less than that which would automatically accrue from the reduction in the cost of services arising out of the war. Savings in Education and Health of 20 $\frac{1}{2}$ millions

are suggested by the Committee, of which 2 millions is in respect of education in Scotland. It is considered that a saving of 16 millions can be effected in the estimates for the Board of Education by raising the minimum age limit to six years, closing small schools, decreasing the ratio of teachers to children, and revising salaries. Economies are also proposed in secondary and higher education. A reduction of 22 millions in the estimates for the Ministry of Health and the National Health Insurance Joint Committee is thought possible by the sale of houses, thus eliminating the burden of 10 millions a year for 60 years, and by an increase of $\frac{1}{2}d.$ a week in the contributions from both employers and employed to National Health Insurance. In the case both of education and health it is pointed out that a great source of waste is the percentage grant system, which it is considered by the Committee should be replaced by fixed grants or by grants based on some definite unit.

Owing to the direct bearing of the rate of unemployment on the Ministry of Labour estimate, no reduction is recommended under this head. It is, however, suggested that the abolition of employment exchanges and the Ministry of Labour be considered, and that a committee be set up with a view to simplifying the Unemployment Insurance Scheme. Similarly, no change other than a small adjustment is recommended in the provisional estimates for Old Age Pensions in 1922-23.

The greater part of the decrease in the provisional estimates of the Ministry of Pensions for 1922-23 arises from an over-estimation of the expenditure for 1921-22 by $10\frac{1}{2}$ millions. In the first report a further decrease of nearly $3\frac{1}{2}$ millions is proposed by economies in the cost of medical treatment, parents' pensions and administration, and, by a subsequent revision, the total reduction reaches nearly $6\frac{1}{2}$ millions. The provision of £ 67,170,000 for ordinary pensions, which will not be reviewed until April, 1923, is not touched.

The second report deals with trade and agricultural services, police and various small votes. The 1922-23 provisional estimates for trade services total $1\frac{3}{4}$ million, excluding £ 247,000 in respect of war services, and a reduction on this figure of £538,000 is proposed. In dealing with the Board of Trade the Committee recommend that the contemplated census of production for the year 1922 be abandoned, and express the opinion that the Department of Overseas Trade should cease as a separate entity and its duties in London be undertaken by the Board of Trade, and

that the work of the Mines Department and the Ministry of Transport should be carried out by other Departments.

In the final report the remaining ordinary supply services other than Irish Votes are considered, and a reduction of $8\frac{3}{4}$ millions is recommended, $2\frac{1}{2}$ million of which, however, is in respect of Middle Eastern Services, included with the fighting services in the table herewith. The grand total thus reaches $86\frac{3}{4}$ millions.

A special section of the final report is devoted to services engaged in winding up the war, expenditure on which is estimated at 44 millions in 1922-23. It is suggested that these services, together with other work of an after-math nature, should be grouped under a single Minister.

SUPPLY EXPENDITURE — SUMMARIZED FROM THE REPORTS
OF THE COMMITTEE ON NATIONAL EXPENDITURE.

(000 omitted)

	Audited Expenditure 1913-14	Budget Estimate 1921-22	Provisional Estimates 1922-23	Reduction suggested by Committee on National Expenditure	Revised Estimate 1922-23
	£	£	£	£	£
Navy ..	51,550*	82,479	81,184	21,000	60,184
Army ..	27,845*	67,660	64,198	20,000	44,198
Middle East ..	—	26,029	11,000	2,500	8,500
Air ..	1,000*	17,330	11,236	5,500	5,736
Middle East ..	—	1,081	1,721	—	1,721
Fighting Services	80,395*	194,579	169,339	49,000	120,339
Eduaction ..	17,156	60,586	59,300	18,000	41,300
Health ..	4,207	24,746	24,620	2,520	22,100
Labour ..	948	22,137	14,990	+1,000	15,990
Old Age Pensions	9,821	21,750	22,304	—	22,304
Social Services ..	32,132	129,219	121,214	19,500	101,700
Ministry of Pensions	—	111,557	96,365	6,300	90,000
Adjustments in Ministry of Pen- sions, Univer- sity Grants and Old Age Pen- sions ..				2,172	—2,172
	—	435,355	386,918	76,972	309,900
Board of Trade ..	317	1,795	721	538	1,350
Dept. of Overseas Trade ..	—	489	345		
Mercantile Marine Services ..	118	433	364		
Mines Department	61	212	178		
Ministry of Transport	—	453	280		
Trade Services	496	3,382	1,888	538	1,350

Export Credits Scheme ..	—	5,000	1,000	500	500
Agricultural, etc., Services ..	731	4,059	3,017	855	2,162
Police, Prisons, etc. General Group (24 Votes) ..	4,389	13,872	13,801	1,595	12,206
	477	8,033	1,566	102	1,464
	6,093	34,346	21,272	3,590	17,700
Colonial Office and Services ..	791	3,258	2,408	+214	2,622
Legal Services ..	580	1,519	1,233	95	1,138
Revenue Depts. ..	28,653	81,866	72,198	2,509	69,689
Houses of Parliament and certain Civil Depts. ..	1,356	4,835	3,667	935	2,732
Office of Works, etc. ..	3,099	12,269	9,440	896	8,544
Art and Science ..	351	1,140	931	43	888
Foreign Office and Diplomatic Services ..	760	2,271	1,874	304	1,570
Stationery Office and Registrar-General ..	1,111	5,124	3,124	584	3,273
Miscellaneous Group ..	903	2,906	3,703	1,131	2,572
	37,544	115,188	99,311	6,283	93,000
Grand Total ..	—	584,889	507,500	86,844	421,000
Disposal and Liquidation Commission ..	—	7,600	4,500	—	4,500
Shipping Liquidation ..	—	5,446	2,982	—	2,982
Railway and Canal Agreements ..	—	75,000	31,510	—	31,510
Treasury Securities Deposit Scheme ..	—	889	39	—	39
Coal Mines Deficiency ..	—	3,000	5,000	—	5,000
Aftermath of the War Services ..	—	91,935	44,031	—	44,031

*Budget estimate for 1914-15.

Mr. Gilbert asked the Secretary of State for India on December 16, what was the acreage in India now under cultivation with the opium poppy; how many chests of Indian opium were now exported annually; what were the destinations of this exported opium; and whether any and, if any, how much was converted into prepared opium for smoking?

Colonel Gibbs (Treasurer of the Household): The total area under poppy cultivation in British India amounted to 156,435 acres in the year 1919-20. 9,823 chests of opium were exported in that year. The countries which imported this opium were the Straits Settlements, Dutch East Indies, Siam, French

Indo-China, Japan, United Kingdom, Hong-Kong, British North Borneo, Ceylon, Mauritius and the Fiji Islands. My right hon. friend is not in a position to state how much of the raw opium exported from India to other countries is there converted into prepared opium for smoking.

Mr. Barnes: Can the hon. and gallant gentleman say if the Government are working in full harmony with the organization under the League of Nations for the reduction or suppression of this trade?

Colonel Gibbs: I am not in a position to state that myself, but I will tell my right hon. friend what the right hon. gentleman says.

Mr. Barnes: Will the hon. and gallant gentleman make enquiries on the matter?

Colonel Gibbs: Yes, sir.

The Government of Bengal resolution on the Report on the working of the Co-operative Societies in Bengal for the year ended June 30, 1921, shows that there has been an increase in the total number of societies from 5,408 at the beginning of the year to 6,366 at its close. Increases have also been registered in the total working capital of the societies, viz., from Rs. 2,82,00,000 to Rs. 3,33,00,000, and in membership from 217,155 to 242,085. On the whole, the working of the Co-operative Department, the control of which has been transferred from the Revenue Department of Government to the Ministry of Agriculture and Public Works, points to a hopeful future. A very encouraging feature is the steady decrease in the contribution from outside sources to the working capital of the societies. In the working capitals of Agricultural Credit Societies, which constitute 90 per cent of the total number and of Central Banks, there have also been appreciable increases. There was a falling off in collections by Central Banks during the year under review, but this is ascribed to the unsatisfactory agricultural conditions and economic depression of the year. The Bengal Provincial Co-operative Federation is in a very satisfactory position, having received fresh deposit of over five lakhs of rupees during the year under report, and this in spite of the fact that its rates are sometimes lower and never more than the rates offered by Government and public bodies. The resolution proceeds to deal with Agricultural Purchase and Purchase, Sale and Weavers' Societies, the Calcutta Credit Societies, etc., and reports progress in all of these branches.

Agriculture in Madras, 1921-22.

By "Rusticus."

Constant dropping is said to wear away even the hardest stone and possibly, if we hammer away long enough in these columns we shall persuade the Director of Agriculture in Madras to attach a map to his Report showing the division of the province into agricultural circles and also the location of the agricultural stations. Such a map would add greatly to the value of what is always an interesting Report, especially if the most important crops grown in each circle were printed on it. Another most useful addition would be a short summary by the Director of the salient features of the progress made during the year. However carefully the report is read, it is by no means an easy matter for the reader to decide exactly where there has been an advance during the year and where, if at all, there has been retrogression. What is wanted is a brief statement of the Director's own views of the position held by his Department in the agricultural life of the people as compared with that in the previous year.

The Report under review suffers somewhat from being a composite production. Mr. Stuart wrote most of it but did not live to finish it. His death meant a grievous loss both to the Agricultural Department with which he had been connected for ten years and to the Madras Civil Service. Madras has been specially fortunate in its Directors of Agriculture and it is impossible to praise too highly the work they have done. It has also been specially fortunate in that it has had so few of them. So far there have been four permanent Directors only, Messrs. Couchman, Chadwick, and Stuart and now Mr. Sampson. Comparisons would be invidious but it may safely be asserted that none of them has done more for Madras agriculture than Mr. Stuart. He was himself a scientist of no mean order and his scientific attainments combined with administrative ability and a personality which inspired confidence in colleagues and subordinates alike were a most valuable asset not only to the Department of which he was the head but also to Indian agriculture generally. He was always one of the most influential members of the Board of Agriculture and the short period during which he officiated as Agricultural Adviser to the Government of India enhanced his reputation for clear thinking and sound judgment. His loss will be specially felt just now when the erroneous view appears

to be widely held that, in times of financial stress, the Agricultural Department is one in which economies can easily and safely be effected. This view, we are glad to see, is not yet held in Madras where the Department is rapidly expanding though there are still many vacancies in the upper ranks. Four only of the eight circles were in charge of Deputy Directors during the year and, of the ten new appointments in the Indian Agricultural service which were sanctioned, three only were filled. The list of these appointments, long as it is, is worth giving here for it shows that the Madras Government are rightly of opinion that expenditure on agriculture is expenditure which will bring in a manifold return not only in the form of increased revenue in all directions but also in that of increased contentment and prosperity. It comprises a Deputy Director for the VIII Circle, a Deputy Director for work on Northern cotton, three Economic Botanists for work on cotton, millet and pulses respectively, an Assistant Principal for the Agricultural College, a second Agricultural Chemist, a Soil Physicist, an Agrostologist (of whose functions we should have liked some description) and a Bacteriologist who, it is worthy of mention, is a lady.

The list, providing as it does for two specialists for cotton, shows the importance which is attached in Madras to work on that crop. Mr. Hilson has now been engaged for nine years in evolving superior strains of Northern and Western cotton at the Hagari and Nandyal Farms and has succeeded in producing two excellent strains, Nandyal 14 of Northern and Hagari 25 of Westerns. Nandyal 14 has been very well reported on by Messrs. Binny & Company, and both strains commanded a high premium over the local varieties. Nandyal 14 obtaining Rs. 55 and Hagari 25 Rs. 49 per bale of 400 pounds more than the indigenous cottons. In Karnool, enough seed of Nandyal 14 was sold for 30,000 acres, and if the season had been more kind, the whole of the cotton area of the Nandyal valley would this year have been covered with this variety. Enough seed of Hagari 25 was sold for 12,000 acres in the Bellary District and, here again, had the season been normal, there would have been seed available for 180,000 acres instead of for only one-tenth of that area. In spite of adverse climatic

conditions, it will, however, be seen that progress has been very substantial and there can be no doubt that the ryots have already derived considerable benefit from the introduction of the new strains. Work on Tinnevely cotton was perhaps hardly so successful. Although they were distributed either departmentally or through the agency of seed unions, it is not altogether satisfactory to find that there was a greater demand for Uppam seed or for a mixture of Uppam and Karunganni seed than for the Agricultural Department's Company cotton and that a premium of Rs. 5 to Rs. 10 per maund was obtained for the former. If, as is stated, the reason is that the cultivator considers that the local seed gives him a surer return than Company cotton, it would seem that he has still to be convinced of the superiority of the latter, a matter which we thought had by this time been placed beyond doubt. Mr. Hilson, who acted as Director after Mr. Stuart's death, says that the matter is one for test and adds that it is probable that Company cottons have been pushed into tracts for which they are not suitable. It is obvious, in these circumstances, that there is still much work to be done on Company cottons. The Agricultural Department is continuing single plant selection and has discovered selections which, though not yet grown on a large scale, promise to give better yields than the standard types, Company 2 and Company 3, which are given out to ryots. After all the work done by the Department in the Tinnevely District in stamping out Pulichai cotton, the inferior variety which was grown almost entirely for the purpose of mixing with superior cottons, it is regrettable to find that this has reappeared and was, in some cases, grown deliberately. Most of it was, however, pulled up by agreement with the owners so that no great harm has so far been done. Mr. Hilson has recently been appointed Cotton Specialist, mainly if not entirely for work on Cambodia and his work on that variety should yield valuable results before long. It would be very disappointing to all interested in improving Indian cotton if the deterioration in Cambodia which has been so apparent in recent years were to continue. In accordance with the recommendations of the Indian Cotton Committee, Mr. Hilson has set himself the preliminary aim of producing a type of Cambodia with a length of lint of not less than one inch giving the heaviest yield per acre that is possible. In the hope of securing these two desiderata, length of lint and high yield, efforts were made to

cross Cambodia with Nandyal 14 and Roseum 128 but proved fruitless. An important step in arresting the deterioration of Cambodia was the application of the Agricultural Pests and Diseases Act to the Coimbatore District. The great falling off in the quality of Cambodia cotton in 1988-19 was traced to two insect pests, the stem weevil, which damages the stem and weakens or kills the whole plant, and the pink bollworm which bores its way into the boll and feeds on the seeds, damaging and staining the lint in the process. Both these insects develop winged forms which can fly from field to field, laying their eggs on fresh cotton plants. High prices tempted many ryots to leave their crops of Cambodia in the field for two or three years instead of pulling them up at the end of the season and growing another crop. The results were that the insect pests could multiply all the year round, that they did so, and that the price of the 1919 crop fell by Rs. 25 a bale as soon as the new crop came into the market. The application of the Pests Act has put an end to this. Ryots are required to remove all Cambodia plants from their fields before August 1st. The effect of this measure has been immediate and gratifying. The quality of the Coimbatore crop of 1920 was excellent and the price went well above that of Broach in Bombay whilst the condition of the 1921 crop when Mr. Hilson saw it left little to be desired. The Entomological Department is rendering material assistance in combating both pests. It has already discovered two natural enemies to the stem weevil whilst its work, in combination with that of the Cotton Specialist, has shown that it may be possible to evolve strains of cotton which are more or less immune to it.

Mr. Parnell's selected strains of paddy are making splendid headway. More than 128,000 pounds of seed of different strains and varieties were distributed during the year. Strain 76 has spread so rapidly in the Tanjore district that it has now reached the limit of the tract for which it is suitable whilst strain 24 is so popular round Erode that departmental agency is no longer required to push it. Mr. Parnell has produced strains which give an increase from 10 to 16 per cent, over any so far given out and these are being multiplied with a view to distribution. Some strains from Nellore Samba which were tried at the Paddy breeding station have given such extraordinary yields compared with the bulk crop of this variety grown at the Coimbatore farm that Mr. Parnell declines to publish the figures until they have been tested by a further year's trial.

It cannot be said that the Department's efforts to promote the growth of improved varieties of sugarcane have made much progress. At Samalkota, two Java varieties, J33A and J247, have, for over three years, given the very high yield of $4\frac{1}{2}$ tons of jaggery to the acre, but, as only 47,000 sets of these were distributed, there can have been but little increase in the area under them. Scarcely anything is told us of the fate on the Madras stations of the canes bred by the Sugarcane Expert at Coimbatore. One of these, Co. 1 gave the best Jaggery at Coimbatore itself though that was only a moderate yield. A notable feature of the cane-breeding work was the flowering of the Mungo group of canes, the best of the indigenous canes of Bihar, for the first time. It is true that the flowers were all sterile but the flowering of the canes at all was a step forward and may result in the breeding of specially suitable canes for the great cane-growing tracts of North India.

We have, on several occasions expressed the view that Agricultural Departments in India have not devoted the attention to millets that the place they occupy in the dietary of large sections of the population of India would warrant. The addition of an Economic Botanist for work on millets alone to the cadre of the Madras Agricultural Department is evidence that the local Government recognize the justice of this criticism and it is to be hoped that the new appointment will speedily be filled. Last year the unfavourable season did its best to wreck all the work so far done on millets in Madras. At Hagari, for example, the 15 varieties and 7 special selections of cholam (*jonna*) which were being tested failed to set grain for want of rain, though, fortunately, enough seed had been kept to enable the work to be continued this year. At Palur, on the other hand, it was excess of rain in January which upset the work on groundnut. The experiments on rotation of groundnut and cereals have, however, reached a stage at which definite conclusions can be drawn. These are that mixed cropping, that is, the interplanting of a cereal with groundnut gives a better money yield than a pure rotation, that it is better to vary the cereal every year and that cumbu (*Pennisetum typhoideum*) is the best of the cereals tried. The work on cocoanuts on the West Coast has established that the local practice of planting cocoanuts in deep pits sunk well below ground level is quite unnecessary, a conclusion which should result in a great reduction in the cost of cultivation. It has also established the advantages of in-

tercultivation in cocoanut gardens. When this is done, the yield steadily improves even though no special manure is used. At Kasargod, it has gone up from 28,860 nuts in 1918-19 to 50,026 in 1920-21, whilst the yield of the block which is left uncultivated has steadily decreased.

Cattle breeding operations in Madras suffered a severe set back when Mr. Carruth resigned. His successor, Mr. Littlewood, only joined duty in January, 1921, so that there is little to be recorded under this head beyond the fact that the problems to which he is devoting attention are the improvement of the Ongole breed of cattle, the improvement of the country buffaloes and the improvement of the Madras milk supply. The work of the Agricultural Engineering branch was also practically at a standstill during the year. The pumping and boring section was handed back to the Industries Department to which it formerly belonged and the headquarters of the Engineer was transferred to Coimbatore. It is stated that his work in future is to comprise research and experiment in the adopting of modern agricultural machinery and implements to Madras conditions and the improvement of indigenous machines and implements, the supervision of the training of the students of the College in Farm Engineering, and the supervision of the machinery and the water, gas, electric and other installations at the College and the agricultural stations. It is added that very little was done in regard to the first of these, owing to the want of an office and workshop and also of subordinate staff. It appears to us that this is by far the most important branch of the Engineer's activities and we are inclined to doubt the wisdom of the new arrangement. There is a danger that it will tie the Agricultural Engineer too closely to Coimbatore whereas it is most necessary that he should tour extensively in order to become closely acquainted with agricultural conditions and, above all, with what his subordinates are doing in the way of advice and help to cultivators who have purchased machinery or implements recommended by the Agricultural Department. In pursuance of the new policy, the jaggery-making installation at Pallapalayam near Coimbatore has, we believe, been handed over to the Industries Department. In our view, experiments with small power plant and improved furnaces for the manufacture of jaggery are distinctly matters for the agricultural rather than the Industries Department for the former Department is in much the better

position to discover what the cultivator's real needs in this respect are. The Indian Sugar Committee not only recommended that the Agricultural Engineer in each Province should experiment with a view to the evolution of a standard design for small power plants to crush one and two tons of cane per hour but also that all loans for the encouragement of the jaggery industry should be granted by the Agricultural rather than the Industries Department. If the two Departments keep very closely in touch, all may go well but we doubt whether the fact that the Agricultural Industries and Co-operative Departments form part of the Development Department, *i.e.*, that they have a common Minister is quite sufficient to secure proper co-ordination of their efforts. It is, for example, evident from the Report that the sum total of the agricultural activities of co-operative societies in Madras does not amount to very much. The Amalapuram Co-operative Union purchased and sold to its members a substantial quantity of manure and dhaincha seed; co-operative societies in the Salem District bought seven monsoon ploughs, five societies on the West-Coast bought iron mills and pans for jaggery making for the use of their members whilst over a dozen purchased fish manure for distribution. In South Arcot and the neighbouring districts, co-operative societies seem more wide awake than elsewhere to their true interests and there various improvements in cultivators' lands and considerable sales of implements were effected by co-operative agency. In Tanjore, on the other hand, it would seem that the large quantity of fish guano purchased for co-operative societies would have remained unsold had it not been for the Agricultural Department.

Experiments in agricultural education are never ending. Madras has gone back on the system of a four years' course at the Agricultural College divided into two parts and has now completely separated the certificate and the diploma courses. The diploma course will now last for three years and admission to it will only be allowed to students who have passed the Intermediate Examination of the Madras University with some science as their special subject. The qualification for the two years' certificate course will remain, as at present, the possession of a Secondary School Leaving Certificate. The figures of applications and of actual admission to the College present some curious features. Though there were 252 applications for admissions to the Certificate course, of the 39 students who were

offered admission, only 26 joined. Again, of the 107 applications for admission to the new diploma course, 28 were offered admission, but only 18 joined. It is not explained why the vacancies thus left were not filled up from amongst those who were refused admission in the first instance. The falling off in the popularity of the certificate course is attributed to the fact that, normally, this course can only lead to appointments in the lower division of the Subordinate Agricultural Service. The Director of Agriculture had been authorized to give stipends of Rs. 25 a month to not more than 20 students in the diploma class in order to attract students of good qualifications and to encourage them to resort to an agricultural career in preference to entering other overcrowded professions. It is sad to find that it was necessary to grant stipends to all as those who came without them left the College. An agricultural career is evidently without attraction to the educated youth of Madras. He has yet to realize that farming can be both pleasant and profitable. It is more cheering to be told that the quality of the students so far as it can be gauged by examination tests is good. Of the 45 students who appeared for the certificate examination, 37 passed whilst all the 18 who appeared for the diploma were successful. An agricultural middle school is in contemplation at Taliparamba on the West-Coast but has not yet got beyond the stage of acquisition of a site and preparation of plans and estimates. The whole question of agricultural education seems to us to require examination anew. Though India has been overrun by Commissions and Committees of late we cannot but think that the question whether the money spent on agricultural education has been put to the best possible use should be investigated by a strong Committee capable of laying down definite lines for the guidance of the Agricultural Departments throughout India.

A new fibre that will bring wealth to Great Britain has been discovered by Sir Henry Wickham, the great authority on tropical forestry. Since the failure of the Russian flax crops the British Government has been trying to discover a substitute for flax. The new fibre, which is called "arghan", is superior to flax in appearance, strength and water-resisting powers, and is much cheaper to produce. Although not naturally found in British Malay, "arghan" is now thriving there after many difficulties had been overcome.

The Problem of Unemployment.*

By the Right Hon. R. McKenna.

Two years ago, when we were suffering the discomfort of a rapid rise in the cost of living, it seemed appropriate to take high prices as the subject of my Address. I ventured at that time upon a word of warning. Although the high prices were due to the monetary and credit inflation consequent upon the immense borrowing by the Government during the War, I endeavoured to show that any attempt to drive prices down by a policy of forced deflation would lead to grave trade depression and widespread unemployment.

Last year when I addressed you, a policy of deflation has been publicly announced and steadily pursued for a considerable period. I discussed on that occasion inflation and deflation in detail, and outlined so far as I could the monetary, trade and social conditions which arise in either case. We have recently learnt the evil consequences of deflation in the school of experience and this policy has for the time being fallen into disrepute. But unfortunately the lesson has had the effect of turning a considerable body of opinion back in favour of inflation, and we seem now to have in prospect a regular alternation between the two policies, each to be adopted in turn as a remedy for the other. The danger of this proceeding is my apology for touching upon the subject again before I turn to the other matters upon which I wish to address you.

NEED FOR STABILITY OF PRICES.

The danger is a real one because of the force of the appeal which either policy can make to different sections of the public. The trading community require the assistance of the banks and are very much alive to all the arguments against dear money and restriction of credit, which are the accepted marks of a deflationary policy. They know that falling prices, the objective of this policy, mean loss of profit, trade depression and unemployment, and, convinced that deflation is bad, they are apt to think that inflation, the opposite of deflation, must be good. On the other hand, consumers suffer acutely under the pressure of high prices and, if not traders themselves, readily assimilate all the undeniable arguments against inflation. For them, deflation, the opposite of inflation, is necessarily good. The truth is of course that both are bad. What is needed is stability, the point from which both alike proceed in opposite directions.

When we have stability of prices we have a basis upon which trade can be carried on with confidence. Manufacturers, merchants, and retailers, are then able to make their contracts with reasonable assurance that the debts created under the contracts will be paid when due in a currency of the same purchasing value as it had when the obligations were assumed.

The evil of inflation is that it raises prices; the evil of deflation is that it causes unemployment. High prices in any country are marked by a low rate in foreign exchange, and the currencies are most depreciated where inflation has been most rampant. On the other hand, the highest percentage of unemployment is found in the two countries in which a policy of deflation was recently pursued. There is a higher proportion of unemployment in the United Kingdom and the United States than anywhere else, although these two countries have the greatest wealth and the largest volume of foreign trade. The world offers at the present time the clearest examples of the evils of both inflation and deflation. In Russia we see the complete industrial and commercial collapse in which the inflationary process finally ends; while in this country part at least of the trade depression and unemployment, and much of the budgetary difficulty which we see ahead of us, are attributable to the policy of deflation.

CAUSES OF UNEMPLOYMENT.

The overwhelming gravity of the problem of unemployment with which we are confronted at the present time has led me to choose it as the central theme of my Address to you to-day. In considering its causes it is natural for a banker to have his attention more immediately directed to the effects of financial policy, but we should be taking a very partial view of the subject if we failed to give due weight to the other influences which have their share in creating the unparalleled amount of unemployment that we have now in this country. We depend so greatly upon foreign trade that external conditions are a factor of first-rate importance; so also are our labour conditions, which in a large degree determine the cost of production; and so too, by its moral as well as its material influence, is the toll levied upon trade and commerce by taxation. It would be impossible within the limits of such an address as this to give more than a bare outline of each of these causes

* Part of speech delivered by the Rt. Hon'ble R. McKenna, Chairman of the London Joint City and Midland Bank, Limited, at the Ordinary General Meeting of Share holders held on January 27, 1922,

of unemployment, but in the short time at my disposal I will ask you to consider first the state of Europe, next our labour conditions, and lastly the burden of taxation.

ECONOMIC CONDITION OF EUROPE.

It would no doubt have been desirable that in the Europe created by the Treaty of Versailles, we should have found as good a market for our products as we had before the War. But our responsible representatives, whose freedom of action was restricted by international considerations, could not have their attention solely directed to our trading requirements. The political necessities, which, regardless of economic needs, compelled the dismemberment of Austria-Hungary and the creation of a group of new States without any tradition of organized government, must have been very powerful and may still be too powerful to permit a modification of the present settlement. If the economic needs of Europe were the primary consideration in international policy our course would be tolerably clear. We should recognize at once that modern industrial and transport conditions have brought all countries into such close trading relationship as to make each an integral part of the trading world as a whole. One nation, and still more a large group of nations, cannot be broken up and impoverished so as to destroy its ability to function without throwing the entire machine out of gear. If Russia fails to buy tea in China or India, our Eastern market for cottons is narrowed, the United States sells less raw cotton to us, and our shipping, banking and insurance business is impaired. Illustrations could be multiplied indefinitely, showing how the trade of each country is linked up with that of the whole world. Our own trade cannot recover its pre-war activity whilst so many countries continue in their present broken down condition, and though our plans to foster our export trade by the grant of special credit facilities may be a temporary palliative, the only lasting solution of the problem is by the re-establishment of genuine peace and an ordered system of government throughout Europe.

GERMAN REPARATIONS.

An essential preliminary of the restoration of Europe is to settle the terms of the German indemnity upon a sound economic basis. While we recognize that political and international considerations could not have been disregarded in settling the amount and form of the demand upon Germany, the subject is one which admits of being treated from a purely economic point of view.

When the German indemnity was first discussed the public expected a huge money contribution by Germany which was to go a long way towards paying for the war. A total figure of £20,000 millions was talked of, our share of which, about £4,000 millions, was to be used to pay off a large part of the National Debt. At a later date the original estimates of Germany's capacity was considerably modified, but even the reduced figures of the Ultimatum of London point to the conclusion that there was no clear idea of the manner in which alone international debts can be paid.

When one nation owes money to another, it is obvious that the debt cannot be discharged by payment in the money or currency of the debtor country except in so far as this consists of gold coin. If the creditor were willing to accept paper, I have no doubt that the printing press would very soon prove equal to meeting any nominal liability. Payment in gold, though possible to a small extent, may be left out of account, as the amount available is insignificant in relation to the amount of the debt. When then Germany is required to pay large sums periodically to the Reparation Commission, what is really meant is that Germany must export during each period saleable commodities which have a total selling value equal to the liabilities she has to meet.

If this were the whole problem, it would not present any great difficulty. The maximum annual payment Germany could be required to make under the terms of the London Ultimatum is about £400 millions, and there is no doubt that German industry is more than equal to an export of this value. But an industrial country cannot have a large export without receiving imports. Germany has to import a considerable proportion of her raw materials and a certain amount of food, and payment for these must be a first charge upon her exports. The utmost she can pay over to the Reparation Commission is her exportable surplus, and, considering the question only from the point of view of the amount Germany can pay, the problem becomes one of determining the extreme limit to which this surplus could be forced. What that limit may be I do not venture to say, but, judging from the experience of the last six months I do not think that it could possibly be made sufficient to meet her liabilities for reparations under the Ultimatum of London.

EFFECTS OF A FORCED GERMAN EXPORT.

The more or less however of the German

exportable surplus obtainable under external pressure is not the only point we have to bear in mind. We have to consider also the other effects of this pressure and how it reacts upon ourselves and our own trade. After all we exact reparations in order to gain some advantage for ourselves. If the form of the reparations and the means adopted to secure payment do us more harm than good we fail in our object. External pressure means forcing Germany to develop her export trade under penalty of invasion, blockade or such other punishment as the Allies may inflict. But Germany can only export in competition with her trade rivals whom she must undersell in the foreign market. To ensure cheap production she must pay less wages than other nations for an equal labour product, an object she can achieve by depreciating the mark in foreign exchange so as to keep its external value below its internal value. So long as this difference in value exists, it affords a premium on German exports, and as the pressure upon her to pay reparations continues, she cannot avoid a progressive depreciation of her currency.

We have seen in recent months this process in action. We have seen how a compulsory depreciation of the mark has stimulated German exports, and as her manufacture competes directly with ours any increase in her trade must be largely at our expense. Perhaps we should not have suffered as much in normal times as we do now when effective foreign demand, owing to the closing of the Russian market and the general disorganization of Europe, is very restricted; but in the actual condition of affairs German competition at prices far below what is possible for us is a serious blow to our foreign trade, and is one cause of the depression and wide-spread unemployment of the last twelve months.

The injurious effect of a forced German export is not felt by us alone; every market in the world is disturbed by the depreciation of the mark. In all countries capital has been invested, trade has been organized and millions of workers—I include employers and employed under this name—have found their daily occupation in meeting the requirements of foreign and domestic trade on a certain basis of demand and supply, a basis founded upon the normal capacity and growth of each nation. If now it is sought to force one country to make a gigantic export of goods which, if accomplished, would flood the markets of the world, the whole balance and adjustment of the foreign trade of every nation must be

violently upset. Before Germany could meet her full liability, before she could develop her foreign trade to such a degree as to have an exportable surplus of £400 millions a year, the foreign trade of this country, her chief competitor, must dwindle into insignificance.

HOW GERMANY CAN PAY.

It will be asked, what then can Germany pay, without injury to us, towards making good the civil damage the Allies have suffered in the War? As to the annual amount, she can pay to the full extent of the export surplus her trade can give her without forcing the external value of the mark below its internal value. As to the form, she can pay in specified commodities, which in our case might include sugar, timber, potash and other materials which are indispensable to us but which we either do not produce at all or in insufficient quantities. She can pay also by the surrender of any foreign securities her nationals may possess, so far as they can be traced, and, if the Allies are willing to accept this form of payment, by the direct employment of her labour in reconstructing devastated areas. In all that I am saying now I am speaking only from the economic point of view. It is not my province to enter into the sphere of political action. But I cannot help thinking that an agreement founded on a realization of economic possibilities would be at once more advantageous to the trade interests of the world and more productive in reparations payment itself than successive ultimatums which in due course prove to be impossible of execution.

LABOUR AND RESTRICTION OF OUTPUT.

If we pass from the external influences upon our trade which at the present time are affecting us injuriously and turn to our labour conditions, I believe we shall find that here also mistaken economic ideas are at the root of much of our trouble. Every person in this room would, I have no doubt, regard it as the merest commonplace to say that all rules, or customs or practice which by restricting output cause more men to be employed than are necessary to do a given piece of work in a given time, must increase the cost of production and in the long run be harmful to trade. But we should make a mistake if we thought that this was an opinion generally held by workmen. Many workmen of course have as good an understanding of economics as anybody; and it is right to say that so far as I am aware there is no Trade Union regulation, with possibly one exception, which in so many words directly restricts output. But it is not open to doubt that such restriction

is very common in practice. We know for instance how usual it is to prescribe a limit which individual output may not exceed, and it is quite customary upon the introduction of a new machine to insist upon more men being employed than the machine really requires.

Underlying this practice or custom is the praiseworthy purpose of preventing men being thrown out of employment. I believe a large part if not the majority of our workmen think that a restriction of output has this effect. In a country like ours in which trades are greatly subdivided and every man is confined by habit and training to a particular section of work, the fear of unemployment is the bane of working-class life; and if the unwritten rules restricting output did in fact prevent unemployment, we could not hope to see them given up. But since they do not; since on the contrary the supposed remedy for unemployment is itself a powerful aggravation of the evil, what we need is to convince the workmen that their economic theory is false.

A FALLACY EXAMINED.

Let us examine for instance how a rule requiring more men to operate a machine than are needed works in practice. I will take a case in which the actual number required to handle the machine is only two, but the rule requires that three men should be engaged on it. The framers of the rule believe they have achieved their object: they have found employment for an additional man. But is this really so? There is still only work for two men. The third man is paid, but in a true sense there is no work for him. We have yet to examine the question of who it is that pays this unnecessary third man, and to see the effect of this payment upon employment generally.

At first sight the answer to this question is obvious. The third man's wages are paid by the employer. But like so many obvious answers to economic questions, this, though superficially true, is fundamentally untrue. Let us look for a moment behind the apparent at the real facts of the case. The employer, we may suppose, is executing a contract. He based his tender on the cost of the materials, the total of wages, the overhead charges and the anticipated profit. In his estimate of wages cost he included the third man whom he would have to pay for doing nothing, and his tender was increased accordingly. The wages of the third man were not paid out of the employer's profits but were a charge upon the cost of production and raised the price of the goods he had to deliver.

EFFECTS OF RESTRICTION OF OUTPUT.

All restriction of output raises the price of the article produced, and if the restriction operates over a wide enough field, it must increase the general cost of living and thereby reduce the real value of the wages received by all workmen. Combination amongst workmen to raise wages is very different from a combination to restrict output. In the former case the workmen seek to obtain for themselves as large a share as possible of the total earned by the joint efforts of capital and labour; in the latter they seek to increase the number of men amongst whom the workmen's total share is to be divided. They do not see that this is the effect of the restriction of output, because it does not show itself by a reduction in money wages. All that they see is that more men are receiving wages, all of whom are paid at the same rate. They fail to observe that the wages will buy less; or, if they observe it, they attribute the rise in price to some cause other than the high labour cost.

But the evil consequences of a restriction of output do not end here. Let us go back to the case of three men being required on a machine which two could operate. The contractor, being obliged by this rule to add to his price, may lose the order to a foreign competitor. The whole of his men may then be thrown out of employment, and the very misfortune, which it was sought to avert in the case of a few men only, falls upon the whole body. That this happens we have only too good reason to know. The first effect of a restriction of output is a rise in the cost of living; the next effect is general unemployment. The greatest sufferers are the workmen themselves. They share in the product of their labour as a whole, and, if they did but realize it, are most benefitted when each individual member of their body works at his highest efficiency.

I am afraid you may think that I am labouring to prove an obvious conclusion, but I would remind you that we are all apt to turn aside from the narrow path of strict economics when our interests or our preconceived ideas seem to point another way. If we are surprised that elementary economics are sometimes disregarded by workmen we must not forget that they were no less ignored in dealing with German reparations. And when I turn now to the third cause I have mentioned of our bad trade and unemployment, excessive taxation, we shall find here also that economics are treated as of little account.

A NATION'S TAXABLE CAPACITY.

It would not be easy — I doubt if it would be possible — to define the limits of a nation's taxable capacity. Too much depends upon the human factor which varies so greatly in different people. One man will exert himself to the utmost though the tax collector should take from him 10s. in the £ of all he earns; another will be disheartened if he be mulcted of but 5s. in the £. We cannot doubt however that taking the nation through there is a limit beyond which if taxation continues so high as to give only a very small return for additional effort and for the risk of additional capital, it will become a matter of general occurrence that the effort will not be made and the capital will not be risked.

As wealth is created by human effort the greatest care should be taken not to dishearten those upon whose enterprise so much of the industrial progress of the country depends. Looked at from the point of view of national wealth and prosperity, in which we all have an interest, it is bad policy to deprive business men of the stimulus of a reasonable return for their labours. It may be difficult to determine in advance the exact maximum scale of taxation which could be imposed upon us without impairing in any marked degree the national spirit of business enterprise, but we cannot shut our eyes to the signs that our present taxation has probably exceeded this limit.

EVILS OF EXCESSIVE TAXATION.

But the question is not merely one of the discouragement of effort. We know that if business is to expand and prosper continuous additions must be made to the capital employed. A growing business — and at every period it is upon the growing business that the progress of the future depends — is one in which a large part of the profits each year are saved and put back into the concern. By this method the energetic and capable young man slowly acquires the additional capital he needs for development and brings himself to the front. If now the whole or a large part of his savings is absorbed each year in taxes, he is deprived of the means of enlarging his business. New plant cannot be acquired; additional stock cannot be bought; growth becomes impossible. The capital which the keen, active, enterprising man could use to the utmost advantage in developing trade is taken from him and spent unproductively on one of the manifold activities of the State. In such conditions business must become stagnant and in this country, where the industrial or-

ganization is contrived for expansion and a continually growing production, stagnation means failure.

Let us look at excessive taxation in another aspect. Every one is agreed that taxation of the poor on such a scale as to deprive them of the means of obtaining the necessities of life is morally wrong. But it is not generally accepted that excessive taxation of the rich is economically wrong. Most rich men do not spend the whole of their income on their own consumption. Some part, and often a very considerable part, is saved, and these savings are lent as industrial and commercial capital. A high Super-tax in the case of the rich is largely a tax upon savings and the money taken by the State is withdrawn from productive use and spent upon consumption. In a healthy condition of a State no more should be raised in taxation than will leave an amount available for capital development sufficient to meet all the needs of business.

EXPENDITURE MUST BE REDUCED.

Our present scale of taxation then I believe to be so high as to undermine our national business energy and enterprise and to deprive us of indispensable capital. What is the remedy? There is only one, which we must face with all the determination and resolution at our command. We must reduce expenditure to the utmost limit consistent with our contractual obligations and the supply of indispensable services. If we do so now, we shall quickly recover our national earning power and with it will come the elasticity of revenue which we experienced during the second half of the last century. The ideal of economy both in public and private affairs, is alluring and popular, but the practice is quite another matter. It is difficult, often hateful and certainly never popular. But to-day, looking at our decline in revenue, the state of our trade and the dangers which confront us, we have no choice. I have no hesitation in saying that, whatever the difficulties, the strictest economy in our national expenditure has become the first and most imperative necessity of our time.

An expert has arrived in Jamaica from Scotland to take charge of a factory for the manufacture of cordage, which is being erected in the central part of the island. The machinery for the purpose has arrived from the United Kingdom, and is being erected. The factory is being controlled by a company, which is also interested in sisal plantations aggregating 4,000 acres in that part of the island.

The Indian Budget, 1922-23.

Sir Malcolm Hailey's Statement.

The following is the full text of Sir Malcolm Hailey's speech made at the Legislative Assembly on March 1, in introducing the Budget for 1922-23.

It was my duty last year to place before this Assembly a budget which exhibited a heavy deficit. I had to confront the House, at the very inception of its career, with one of the most difficult problems which can fall to the lot of a representative Assembly. The responsibility was heavy, for the world was watching to see how this, the youngest of Parliaments, would meet a test which might have strained the capacity of many an older institution. But those of us to whom the success of the reformed constitution had become an article of faith had no apprehensions; and we were justified of our confidence. The House took up its burden in a spirit which in the common judgment of every serious critic at once sealed its position among the representative institutions of the world. It would have indeed been a welcome task if I could have come before you to-day with the confident assurance that your courage had met with the success it deserved; if we could have told you that the steps you took last year had rehabilitated our finances and closed the gap between the income and the expenditure of the nation. But Providence has seen otherwise, and this Assembly again has to face the heavy responsibility of dealing with a situation of great financial difficulty. It is no secret that the incomings of the current year have fallen far below our expectations; and as the House has probably already anticipated, the estimates for the coming year disclose a heavy excess of expenditure over revenue.

DEFICIT AND CAUSES.

Let me from the first make one point clear. I shall have no such apologies to make—as may have to be offered by the Finance Ministers of other countries—regarding increase of expenditure due to causes which could be held to be within our own control or due to our own volition. You will not have cause to complain that we have, in circumstances of exceptional stringency, embarked on fresh avenues of expenditure, or engaged in enterprises which should have been deferred until our finances were in a position to afford them. The details I shall subsequently give you will make this abundantly clear. Our difficulties are due to a falling exchange, to the

continued depression in world trade, to reduced returns from our commercial services and increased running expenditure incidental to their maintenance. I can claim—and the figures I present will justify my claim—that the most exacting control has been exercised in preventing any excess over our estimates of standing and established charges, and that every possible avenue of fresh expenditure has been stopped and barred. So much for economy; our critics will, however, probably go further and urge that in all the circumstances it was not enough merely to have stopped fresh expenditure we should have entered on the more drastic field of retrenchment. I shall return to this subject again; as the House knows we fully admit the necessity of retrenchment; but I will only say here (and again without fear of challenge) that though retrenchment would improve our position, no measure that we could conceive or could hope to carry through could radically alter the situation in which we find ourselves. I have thought fit to make these points clear from the first. I have to put before the Assembly a position which is full of difficulties for us, for the House and for the country; but I can present it with all the greater confidence and with all the greater frankness, because I am convinced that every fact and figure which I present will only justify and confirm the points, I have now made. It is a situation which we have to meet together; the House I know will meet it with that high sense of responsibility with which it encountered the situation of last March; we may differ in detail as to the exact method of dealing with it; but neither as to the causes which have occasioned it, nor as to the main solution to be applied have I any apprehension of difference or dissent.

I come now to the details of our position, and will deal first with the general conditions which have falsified our estimates of revenue for the present year. What were the circumstances in which we budgetted last March? The trade boom which followed the Armistice had definitely passed away and a heavy reaction had set in; but the future outlook was obscure, and it was impossible to say what precise effect it would have on our revenues. We budgetted in an atmosphere of trade depression, and our estimates allowed for a definite retardation in the normal growth

which our revenues might otherwise have been expected to exhibit. But it was not possible to foresee that the depression of trade would reach such abysmal depths, nor that its consequences would react so disastrously on our finances. I will take separately the internal and external factors. As to the former, the effects of the poor monsoon of 1920 continued to show themselves throughout the year 1921. Wheat rose to Rs. 6 a maund in January and to the almost unexampled figure of Rs. 8½ per maund in December; Rangoon rice increased during the same period from Rs. 4 to Rs. 6½ a maund. Not only did we have to continue the embargo on the export of wheat, but India became a heavy importer. Labour trouble at the collieries curtailed the raising of coal; we could only maintain the service of our railways by purchases of foreign coal at greatly increased expense and again of course with detrimental effect on our balance of trade. Thirdly, the conditions of the country have been such, partly economic and partly political, that there has been a complete stagnation of the ordinary activities of internal trade. I shall not dwell again now on the unfortunate series of events which led to the locking up of many million pounds' worth of imported goods owing to the inability or the failure of importers to take up their contracts. But whether this was due entirely to economic or partly to political causes, the event was typical of much of the history of internal trade throughout the year. Not even an unusually favourable monsoon in the autumn of 1921 has succeeded in solving a position due to the interaction of these double influences. Such were the internal conditions; I need not dwell at length on the external conditions. The prevailing depression in Russia and Central Europe, aggravated by famine conditions in the former country, continued to deprive India of the customers on whom in normal years she is wont to rely. How unstable was the basis on which our exports depended is shown by the history of our reviving trade with Germany. Exports to that country which averaged 1½ crores monthly during the period July-September collapsed with the catastrophic fall of the mark in October and had fallen in December to only half a crore. Our exports, which had reached their height with 31 crores in March 1920, had declined to 18 crores in March 1921 and reached their lowest point in June of last year with 16 crores. It is true that there was a recovery to 21 crores in December, but on the whole, greatly

reduced as has been the scale of our imports, there is a total balance against us of 33 crores for the ten months ending January.

REVENUE AND EXPENDITURE 1921-22.

Let me proceed at once to give in figures the total result of these unfavourable factors. The budget estimates as finally passed provided for a small surplus of 71 lakhs; the revenue including new taxation being estimated at 1,28½ crores and the expenditure at just over 1,27½ crores. We now estimate that the revenue will be 1,08 crores or 20½ crores less. I will take only the principal items. Under *Customs* we expected 37¾ crores; we do not now look to realize more than 33½, or a falling off of 4¼ crores. But for a heavy revival of the import of sugar in the autumn, our total receipts would be even worse; indeed sugar has come to our assistance to the extent of 6¾ crores out of the 33½. In *Taxes on Income* we shall probably have to pay so heavy refunds, owing to adjustment of provisional assessments made on last year's profits, and taking receipts and refunds together, the income will fall short by 90 lakhs of the budget figure of 18½ crores. *Salt* will be short by 80 or 90 lakhs of the expected figures of 7 crores, mainly owing to our inability to maintain a full supply of Northern India salt. Opium will be short by 70 lakhs on the expected total of 373 lakhs; clearly our customers in the Far East anticipate decreased consumption as the result of international action. I come now to our commercial departments. Naturally enough our Railways reflect the great stagnation of trade throughout the year, and in addition, the returns of the last few weeks have shown the effect of the recent strike. We expected to get gross receipts of 87 crores and shall have to content ourselves with 83. But the mischief does not end here, for far worse than the decline in gross traffic receipts is the increase in working expenses. Owing to short raisings of coal we have had to pay more for the Indian article, and to supplement the home supply by heavy purchases from abroad and altogether the total excess of working expenses over the budget figure will be 7¼ crores. Allowing further for some falling off in the receipts from the surtax, the total worseness on the railway budget will be no less than 13 crores; and railways, after payment of interest charges, will, for the first time for many years, be working at an actual loss, namely over 2½ crores. Finally, there are the *Posts and Telegraphs*. The gross revenue is about 1½ crores less than anticipated,

of which about 35 lakhs occur in the yield from the new rates approved by the Assembly last year. Here again we have an instance of a large commercial department working at a deficit; the total loss to the general taxpayer on the combined department in the current year will be about 90 lakhs. The combined effect of these items is to produce the falling off of 20 crores to which I have alluded.

CURRENT YEAR'S EXPENDITURE.

Then as to expenditure. As I have said we expected to spend $1,27\frac{1}{2}$ crores. But we shall have to spend 2 crores more on account of the increase in *interest charges* due to the larger proceeds of the rupee loan realized by us this year and the increased borrowings undertaken in London. Under military expenditure, it will be remembered that we allowed for 62.20 crores of which 3 crores was attributable to Waziristan and one crore to expenditure on demobilization. During the year, however, operations in Waziristan continued, contrary to our expectations, on the extended scale set up in the concluding month of 1920-21, and altogether our expenditure on operations in that quarter have cost us $6\frac{3}{4}$ crores. I do not propose to analyse here in detail the remaining figures of military expenditure; they still contain abnormal features such as on the one side arrear claims from the War Office and on the other unexpected recoveries of arrears from the same source. There have also been very heavy increase in the cost of foodstuffs. It will be sufficient to say that on the whole, in spite of the increase due to this factor, and to the heavy excess on Waziristan operations, we have managed by careful control to keep the excess down to $2\frac{3}{4}$ crores. The total therefore stands at 65 crores against a budget of $62\frac{1}{4}$. No new permanent liability of any considerable amount has been added to the military charges in India with the exception of an enhanced scale of pensions for the families of Indian soldiers and the expansion of the Territorial force.

The increases in civil expenditure have been of minor importance and have for the most part been passed already by the Assembly in the form of supplementary grants. But there remains one head of great importance, the *loss by exchange*. As I explained last year, the head is really one of adjustment. In the case of our commercial departments, the difference in exchange between 2s. (the rate at which our accounts are kept) and the actual rate is adjusted under the departmental

head concerned, and that accounts for a certain proportion of the excess expenditure under Railways and Posts and Telegraphs. In the case of all other departments this adjustment for exchange is lumped together under the one head Exchange. I need not perhaps go into the circumstances under which we assumed a rate of 1s. 8d. last year; it was an accounts assumption, not a prophecy; but I would remark here that in December 1920 (when of course our forecast was drawn up) the actual rate was between 1s. 7d. and 1s. 8d. We were twitted at the time with optimism; but I do not remember that our critics were then prepared to back any other figure with conviction. Exchange did indeed during September rise to 1s. $5\frac{3}{4}$ d.; but it was followed by a rapid decline to below the 1s. 4d. level, in sympathy with the sudden fall of the German mark. For the rest, the summary which I have already given of our import and export trade is sufficient to indicate the immediate causes at any rate of the weakness of exchange; it only remains to add that the total cost to us under the head "Exchange" of its failure to reach the 1s. 8d. figure must be taken at $5\frac{3}{4}$ crores.

DEFICIT OF CURRENT AND PREVIOUS YEARS.

Altogether then our expenditure is somewhat over $14\frac{1}{4}$ crores more than we expected; and the total deficit will amount to no less than 34 crores. If you carry your minds back to the history of the last three years, the House will realize that this is now the fourth deficit in succession. In 1918-19 it amounted to 6 crores; in 1919-20, mainly due to the Afghan War, the deficit was 24 crores; our final accounts of 1920-21, swollen by many adjustments of arrear expenditure on the Afghan War and the Great War, showed a deficit of 26 crores. Adding the 34 crores to which I have just referred, the total excess of expenditure over revenue in the four years comes to 90 crores. I am not ready to explain to the House the methods by which we have during the past four years provided money necessary for carrying on the administration, not to dwell on the implications to be drawn from this continued succession of deficits. I have still to deal with the revenue and expenditure of the coming year.

ESTIMATES OF 1922-23.

I do not know if there is anyone here who would feel entitled to speak with confidence of the assumptions we should make in estimating for budget purposes the character of the year on which we are about to enter.

For myself, I can only indicate the main factors which have guided us. We have had a favourable monsoon and good winter rains, this in itself should bring down the price of food grains and help to rectify the balance of trade. On the other hand, the bazaar trade still has before it all the difficulties involved in the liquidation of the import contracts entered into two years ago, and the spectre of unrest looms before the trader, paralysing industry and benumbing enterprise. As for the outside world, the relative strength of India's position is of course largely due to her share of the world's staple requirements. It is true that overseas stocks of Indian goods are still large, but they have been much reduced during the course of the past year, and foreign consumers have been forced to come to India to a considerable extent for their immediate necessities. Her raw jute and jute manufactures, though the period of boom has definitely passed, should still hold their own; tea and cotton have indeed recovered to an extent that we could hardly have anticipated last year. The total exports of India during December 1921 were higher than those of any month since September 1920. Although therefore stocks of India's commodities in India are high, the signs are not unfavourable. It is probable that the historian of the future, with a clearer perspective, will look on the year 1921 as the logical sequel to 1920. The latter year experienced the full force of the reaction from the feverish and unhealthy trade activity which followed the Armistice. This reaction showed itself in a collapse of the world's purchasing power, an unparralleled slump in prices and congestion of unsold and unsaleable stocks. In 1921, we had the beginning of the painful process of re-adjustment. We have already made some advance in that process, and the conditions of India are such that (if she can only maintain internal peace) she may reasonably expect to take an early share in the revival of trade.

I admit that the factors are obscure in many directions of great importance and they certainly do not encourage optimism. But on the whole we seem justified in framing our budget estimates on the assumption that there will be some slight improvement over the trade conditions which have existed during the current year. I will take the main heads in detail. Under *Customs* we assume that the imports of piece goods will be somewhat better than those of the current year, and also that, as a result of the with-

drawal of the restrictions on the export of Burma rice, the revenue from that export duty will now become normal. We have also assumed a moderate improvement in the exports of jute; on the other hand, we cannot expect that the imports of sugar will be on anything like the scale of the current year, though we have felt justified in taking the estimate of $4\frac{1}{4}$ crores as against the $6\frac{3}{4}$ crores likely to be received from that source this year. On the whole, we are assuming a net Customs revenue of 36.42 crores, nearly 3 crores in excess of the revenue which we are likely to collect in the current year. Then as regards *Taxes on Income*, we expect an increase in the net demand in most provinces with the exception of Bengal, but on the other hand the figures of the present year have been swollen by large arrear collections, and in the net, allowing for refunds in respect of collections on provisional assessments, we are assuming a total revenue of 19.87 crores, which is about a crore less than our probable revenue in the current year. Under *Salt* we have adopted an estimate of slightly over 7 crores, practically the same as that of the current year's budget. Our receipts from the sale of *Opium* are now mainly derived from the direct supplies we make to Foreign and Colonial Governments on the contracts now in force, and, except when new contracts are entered into, do not vary very much from year to year; our revenue from the auction sales is, however, steadily dwindling and we do not expect more than half a crore from this source, making a total revenue, inclusive of the revenue from excise opium, of approximately 3 crores. This is about 60 lakhs less than the current year's budget and about the same as the revenue we expect to get in the current year.

RAILWAY REVENUE.

In attempting to frame an estimate of net receipts from *railways* we are met with two difficulties. In the first place, it is difficult to say what will be the exact yield from the new goods rates which will be brought into force from April the 1st next, replacing the present surtax. It is also difficult to say what the working expenses will amount to, as the coal market is in an abnormal state and a substantial increase or decrease in the cost of fuel will vitally affect the total. For *gross traffic receipts* we assume that the new goods rates will not yield less than 6 crores, and we think that an allowance of between 4 and 5 crores for normal growth in revenue is as much as can be justified. We think,

therefore, that a fair estimate of gross receipts next year will be $93\frac{1}{2}$ crores. For *working expenses* we have taken the high figure of $68\frac{1}{2}$ crores on the assumption that fuel charges will remain high, and after making as much provision as possible for the replacements and renewals which, as everyone knows, are estimates, the *net receipts* next year will work out to $24\frac{1}{2}$ crores; after allowing for interest and other indirect charges which will amount to 26 crores, the railways will be working at a loss of over one crore. This is not the proper occasion for me to embark upon any discussion of the question how far the administration of our railways should, in any particular year, be carried on with the object of producing a profit to the general taxpayer. It is a matter regarding which one side of the question, and one side only, has been put forward with considerable force in the report of Sir William Acworth's Committee. The House is aware that the proposal made by that Committee to effect a complete separation between the railway and the general budget was duly considered by a committee composed of members of the two Houses of the Legislature, whose report was published last December. That committee decided that, whatever might be the theoretical merits of this question, practical considerations alone made it impossible to effect any such separation for the present. On one point, however, there can, I imagine, be no room for diversity of opinion, namely, that the railways must pay their own way. For this reason we propose to take measures to increase the traffic receipts. The estimates which I have just given already take account of a substantial increase in goods rates in substitution of the existing surtax. The only remaining course therefore is to effect a material increase in passenger fares. An increase averaging about 25 per cent. will, we estimate, produce an extra 6 crores of revenue. This will of course more than make up the estimated loss on next year's working, but we shall have to continue for many years heavy expenditure, debitable to the revenue account, on replacements and renewals, while our enlarged programme of capital expenditure will involve a cumulative increase of interest charges for some years to come; we therefore consider that we are justified in providing for some margin.

LOSS ON THE POSTAL DEPARTMENT.

The remaining important head on the revenue side is *Posts and Telegraphs*. I must first of all explain what we have done as

regards the separation of capital expenditure from expenditure charged to revenue. The House will remember that this question was examined last March on the initiative of Mr. Samarth, when it was decided to transfer approximately 1 crore from revenue to capital as representing expenditure which was intrinsically of a capital nature. That transfer was made more or less summarily; it was obviously desirable to keep on the right side, and not to debit to loan funds expenditure which was really of the nature of running expenses and would only have to be written back to revenue. We have subsequently made a more careful examination of the various items of expenditure, and as a result we have felt justified, in the revised estimates for the current year, in debiting to capital a total amount of 128 lakhs. For the ensuing year, of the total estimated expenditure of $11\frac{1}{4}$ crores we find that we can justifiably take 145 lakhs to capital provisionally, pending of course the reconstitution of the post and telegraph accounts as a result of the investigation which has just been completed by the expert accountants who have been engaged on that work. With this division as between capital and revenue, we estimate that the expenditure chargeable to the revenue account next year will exceed the receipts by about 96 lakhs, after allowing for the debit of interest on the capital charge. This figure, however, does not include the cost of pensions on the one hand, and on the other hand credits for certain concessional services rendered by the department to Indian States or foreign Governments. If we make adjustments on account of these items, there will be a further credit due to the department of about 17 lakhs, and, allowing for this, it may be said that during the current year the department has been working at a loss of about 90 lakhs, and that next year it will be working at a loss of about 80 lakhs. This has a very definite bearing on certain proposals that I shall shortly mention.

This closes my review of revenue for the coming year. Including the increase on passenger rates, it should amount to $116\frac{1}{2}$ crores; without that increase, it would come to $110\frac{1}{2}$ crores as against a revised estimate of 108 crores for the current year. I come now to the expenditure side.

EXPENDITURE.

The first point I have to emphasise is that, as was the case a year ago, the demands of the various departments for the inclusion of items of new expenditure have been enormously

curtailed; in effect, we have made provision for no new expenditure which cannot be demonstrated to be of imperative necessity or likely to be immediately remunerative. Such items of new expenditure as have passed through the meshes of the Finance Department's net have further had to undergo the fire of the Standing Finance Committee's scrutiny before being embodied in the detailed estimates which are about to be placed in Hon'ble Members' hands. One head where the effect of this policy has been particularly marked is *Civil Works*. The figure entered is 166 lakhs, and I must point out that this is only just sufficient to cover maintenance, repairs and establishment charges and the carrying on of works already in progress and that it makes practically no provision at all for new construction. I do not think I need refer to the details of the estimates entered for *interest on debt, sinking funds*, and so forth, for such charges may be regarded as obligatory. Hon'ble Members will notice in the detailed estimates a special expenditure of 60 lakhs under *political charges*; this is a tentative provision for a scheme for the better solution of political troubles on the frontier. It has not yet crystallised into a form which admits of the exhibition of full details. For the rest, the variations in civil expenditure are not large. There will be a saving from the cessation of *census operations*, counterbalanced by certain additions to *income-tax establishments*, and a provision of 16 lakhs for various schemes of improvement at the *salt* sources in Northern India which are of imperative necessity for the safeguarding of our salt revenue. Apart from the extra political charges and the other variations which I have just referred to, the civil heads show a small increase on the probable expenditure in the current year.

As regards *exchange*, I may say at once that I see no indications, in the present conditions and outlook of our foreign trade, which would justify our assuming an average rate of exchange higher than 1s. 4d. during next year, and accordingly that is the figure upon which these estimates are based. In mentioning that estimated average rate, I must again impress on the House that I am attempting no sort of prophecy regarding the future course of exchange, nor should anything that I say be taken as an indication of policy. It is of course unavoidable, for the purpose of the budget programme, to make some sort of assumption, however rough, as to the level at which exchange is likely to

stand, taking the coming year as a whole. I have, as I have said, assumed for budget purposes a rate of 1s. 4d. The debit that will be necessary in our accounts, which are still maintained on a 2s basis, will on this assumption be about 15½ crores, of which 10 crores will appear under the head "Exchange," the remaining 5½ crores being debited in the estimates of the commercial departments.

Finally, before I come to the military estimates, I must point out that we have made no provision for any reduction in the present contributions payable to us by the Provincial Governments, the amount of which after allowing for the waiving of the Bengal contribution, is 9,20 lakhs. The House is aware that several provinces, notably, Madras, the United Provinces and the Punjab, have pressed us strongly for some reduction next year in the amount of their contributions. It is also a matter of common knowledge that many of the provinces are finding it difficult, if not impossible, to cover their expenditure, and have had to ask their legislatures to sanction various schemes of new taxation in order to help balance their budgets. I shall have something more to say regarding the position of the provinces before I sit down. For the present, I will only say that we have not provided for any reduction for the simple reason that, with the certainty of a deficit staring us in the face, it was quite impracticable to do so. But I need hardly say that the progressive reduction and extinction of these contributions must be regarded as a first charge upon any betterness that the financial position of the Central Government may show in future years.

MILITARY EXPENDITURE.

I now take the final and heaviest figure, namely, Military expenditure. The established charges we estimate at 59.70 crores against 58.20 in the current year's budget. Waziristan charges at 2.13 against 3.00, and demobilization expenditure at .35 against 1.00; the total is therefore 62.18 crores or approximately the same as in the Budget for the current year. The increase in established charges does not represent any addition to the strength of the post-war Army as already laid down, except in the case of the Territorial Force, and is largely due to an item which lies entirely outside our own control, namely, the great increase in prices of provisions and other consumable stores. These are estimated to cost nearly 2 crores more than in the current year. Apart from the outlay necessary for the expansion of the Territorial

Force and from a relatively small sum of money for the revision of the pay of certain classes of Indian personnel in Army services whose remuneration has not yet been brought up to the standard obtaining in other quarters, no new demands for military have been admitted. Not only so, but it would have been impossible to keep the established charges down to the figure I have given had we not effected retrenchment in a number of directions, notably in Military Works, the purchase of new equipment, and the strength of the reserve, and further by taking credit for an anticipated shortage of British troops. As regards Waziristan, I fear that the figure can be regarded as tentative only, for it is always difficult to forecast the exact effect of military operations of this nature. These operations may as in the present year lead again to an excess in the military budget. The 35 lakhs on demobilization expenditure represents the sum which the Secretary of State has estimated will be required in 1922-23 for the payment of India's share of the compensatory gratuities to officers of the Indian Army who have been found surplus to strength owing to reduction of establishment.

The net result of these figures is that we expect an expenditure of $1,42\frac{1}{4}$ crores against a revenue, on the basis of existing taxation and including the provincial contributions of 9,20 lakhs, which will amount to $1,10\frac{1}{2}$ crores, *i.e.*, a deficit of $31\frac{3}{4}$ crores, which would be reduced to $25\frac{3}{4}$ crores by the contemplated increase in passenger fares mentioned by me.

HOW TO MEET THE DEFICIT.

I now come to the hardest part of my task to-day; namely, to discuss what measures should be taken to meet the grave problem presented by an estimated deficit next year of about $31\frac{3}{4}$ crores. It is obvious that there are, in theory three courses which can be adopted either separately or in combination. First, we can budget for a deficit, either the whole or part of the above amount; second, we can attempt to reduce our expenditure; and third, we can take steps to increase our revenues. The problem is so grave, and the issue at stake so large, being nothing less than the solvency of the country, that I make no apology for examining in some detail each of these three courses.

Would it be desirable, or would it even be possible, to leave the whole or the major part of this deficit uncovered? Now, so far as I have been able to ascertain, on one occasion only in the past has the Government of this country deliberately budgetted for a de-

ficit. This was in 1915-16, the first budget of the war, when Sir William Meyer budgetted for a deficit of about 4 crores. In introducing that budget, Sir William Meyer carefully explained the reasons which had led him to adopt that course. He emphasised that the Government would not think of proposing to budget for a deficit if the deficiency in revenue promised to be of a more or less abiding character. That, however, he held, was not the case on that occasion; it was then too early in the war to be sure that the excess of expenditure over revenue was anything more than temporary, and unless and until it could be shown that the gap between revenue and expenditure was likely to last for some time, it would not be justifiable to impose increased taxation, especially as the Government's cash balances could at that time be relied on to produce the necessary finance. For the rest, so far as my researches go, the Government of India have always endeavoured to meet the expenditure of each year from the revenues of that year, and although on occasions their estimates have been disturbed and deficits have actually accrued, they have, except on the one occasion mentioned above, never deliberately contemplated that their expenditure should exceed their revenues. I do not think that there can be any doubt that this policy, consistently followed in good years and bad, when the outlook was fair and when it was gloomy, had much to do with the sound financial position in which India found herself at the beginning of the war, and with the excellence of the credit of the State both within the country and abroad.

Now, in considering the extent, if any, to which we should be justified in leaving this estimated deficit uncovered, there are two points of vital importance to which I must invite the careful attention of the House. In the first place, it is necessary to examine briefly the real nature of the current and next year's deficits. Can it be said that the present emergency is similar to that which Sir William Meyer had to face in preparing his budget for 1915-16? I hold that the answer to this must be in the negative. I do not think that it is possible to take up the position that these deficits are due to transient causes, that we can look for better times ahead, and that we should consequently be justified in leaving things as they are, in the hope that before long our revenues will once more have equalled our expenditure. I must say frankly that I see very little prospect of any such equilibrium being attained within a

measurable period. In saying this, I do not mean to imply that either the probable deficit of 34 crores in the current year or the estimated deficit of $31\frac{3}{4}$ crores next year is necessarily to be taken as a measure of the permanent gap between our expenditure and our revenues. I assume that, with the liquidation of our frontier commitments, that portion of our military charges which are classified as "abnormal" will disappear. I also assume that our revenues would respond to any substantial revival in trade, when the day of that revival dawns, as assuredly dawn it must. But after making every possible assumption of this nature, I do not think it can be said that, if things are left as they are, equilibrium will be attainable within a measurable time. It has, moreover, to be remembered that we have a certain loss of revenue in front of us, in respect of the gradual abolition of the provincial contributions. I have not overlooked the fact that the stabilisation of the rupee at 2s. would relieve our revenues to the extent of about 15 crores a year, but the House is in as good a position as I am to judge whether we should be justified in placing any reliance on this consummation. The problem, as I fear we must envisage it, is thus not one of carrying on until we have turned the corner, for the turning is nowhere visible.

WHERE THE MONEY CAME FROM.

Secondly, it is necessary to examine briefly what a succession of deficits really means, and what are the results which it leads to. I will not embark on any theoretical discussion of financial ethics, but confine myself to actual facts. Including the deficit of the current year, during the past four years our expenditure (in using the word 'expenditure' I mean of course expenditure debitable to revenue, and not capital expenditure on such objects as Railways and Irrigation) has exceeded our revenue by a total amount of 90 crores. Where did this money come from? The short answer is that we have been living on credit. About 37 crores have been obtained by the issue of fiduciary currency notes, namely, notes the only backing of which are our own I.O.U.'s. A further 47 crores will have been found by incurring floating debt in the shape of treasury bills, while the remaining 6 crores will have been taken from the proceeds of our regular annual borrowings. Our Treasury bills consist of short term bills (mostly for 3, 6 or 9 months) which we have so far managed to renew on maturity. But it is an open fact we have

only succeeded in doing this by virtue of the recent stagnation of trade and consequent plethora of bank money; it is very doubtful if on any real revival of trade we should be able to keep "floating" an amount of treasury bills on anything like the present scale. A treasury bill outstanding in the neighbourhood of 60, or even of 40, crores is, as I have more than once pointed out, a matter for great anxiety, seeing that at any time, with the appearance of other demands upon the discount market, such as a revival of trade or an acute monetary position, our sales might not cover our maturities and we should then have no alternative, if we were not to dishonour our bills, but to make a further large fiduciary issue of currency notes. During the past month or two we have, in fact, had a preliminary warning as to the insecurity of our position; a sudden tightening of money in Bombay led for a time to distinct embarrassment; in spite of our giving very much more favourable terms for our treasury bills, we found great difficulty in meeting our requirements and were obliged as a temporary measure to re-issue a substantial amount of currency notes which we had cancelled during the preceding months. And of course the dependence of Government upon the money market, to supply it on credit with funds to meet the gap between incomings and outgoings, itself reacts strongly upon the supply of money available for trade, thus setting up a vicious circle. To escape from that circle is one of the most pressing problems before us.

NOT A PRACTICABLE PROPOSITION.

What then is the inevitable conclusion to which these considerations lead? Putting aside all theoretical considerations of principle and of sound financial policy, the financing of a further deficit next year of an amount anything like the $31\frac{3}{4}$ crores estimated is simply not a practicable proposition. I should be much mistaken if we have not already reached the limit of safety. To attempt to increase our floating debt beyond the figure at which it is likely to stand on April 1st next would be to invite not only grave monetary stringency, but possibly even a severe crisis. To raid the Gold Standard Reserve, which has been built up for an entirely different purpose, would be merely putting off the evil day, and would be an expedient which could be adopted only as a last resort and even then purely as a temporary measure. To rely on the proceeds of our annual rupee or sterling loans to finance our deficits would,

as I shall show later in my speech, be equally impracticable, seeing that we shall fully need the whole of these for financing our existing capital liabilities and productive expenditure on our railways. The inevitable result, in short, of any attempt to finance a deficit of this size would, in my opinion, be to force us to large issues of unbacked currency notes, and I am sure the House will agree with me that the effect of such inflation upon the general level of prices in this country, and upon our general credit, would be very serious. My conclusion then is, and I state it with perfect confidence, that the problem before us is one that cannot be shelved or left to look after itself. It is a problem which has to be faced, and it is my duty to ask this House and the country, whatever their opinion may be of the particular proposals that we are making, to join with us in facing it.

How far can we reduce the deficit by cutting down our expenditure? I have already indicated the difficulties which we have encountered in regard to our largest spending department, the army. I have told the House that as regards the civil departments we have cut out all new expenditure which cannot be proved to be of imperative necessity. I do not claim that further reductions are impossible; as the House knows, we are committed to an enquiry into the steps necessary to effect retrenchment, even if that results in curtailing departmental activities. We have agreed to accede to the desire of the Assembly for the appointment of a Committee of retrenchment, and an announcement will shortly be made on the subject. But the field of civil expenditure over which that enquiry can range is small; it does not extend to more than 20 crores; and though retrenchment may and no doubt will be effected, it could have but a minor effect in restoring the balance. In any case a Finance Member must frame his budget not on what he hopes may be effected in the future, but on the basis of the expenditure now actually being incurred.

I have sometimes heard it asked why we cannot simplify to some extent our financial problem by taking to capital certain of the expenditure which is at present debitable to revenue. Why, it is urged, should the present generation have to pay for expenditure on public works or other objects, which have a permanent or semi-permanent life, such as civil buildings, roads and bridges on the frontier, new barracks, etc., or, again, on stores and material used in our commercial departments, such as the Posts and Tele-

graphs? This contention is to a large extent met by the facts that the present estimates make practically no provision at all for new civil buildings, that the construction of Delhi and capital expenditure on railways are already met from capital funds, and that we are already providing for the debit to loan funds of expenditure on stores and material for our Telegraphs. It is, however, quite unnecessary to discuss this question at any length, for, in point of fact, whatever may be the division in our accounts as between capital and revenue, we are unfortunately already meeting a large proportion of our annual expenditure from borrowed funds. The figures which I have already given show that we have been doing this on a very large scale, far in excess of what by any stretch of reasoning could be described as real capital expenditure. To reduce our revenue deficit by a mere stroke of the pen could not in any way affect or cover up the actual position.

INCREASE OF REVENUE.

If I have carried the House with me so far, I have established two propositions. The first is a two-fold one, namely, that the country cannot, if it has any regard for its credit or any thought for its future solvency, take refuge in the simple course of having the whole or even the greater part of this deficit uncovered, and further, that, quite apart from such considerations, it would not be a practicable proposition to do so, even if we tried. Secondly, however successful our efforts may be in reducing our expenditure, and imperative though it is that we should make the attempt, it is out of the question to expect any relief from this source to be on such a substantial scale as materially to reduce the excess of expenditure over revenues. I submit therefore that there is no escape from the conclusion that it is imperative to take every possible step to increase our revenues. We can do this in two ways; firstly, by ensuring that our commercial departments shall at any rate not be a burden upon the taxpayer, and shall, if possible, yield a profit; secondly, by increasing taxation. As regards the first method, I have already indicated that we propose to increase the railway receipts to the extent of about 6 crores by an increase in passenger fares. There remains the Post and Telegraph Department. It is not possible to increase the telegraph charges, which are already on the high side, and indeed that branch of the department more than pays its way. We are, however, as I have already shown,

losing heavily on the combined Post and Telegraph Department. Last year we invited the legislature to agree to certain measures for increasing our postal receipts. The most important of these, namely, the doubling of the postcard rate and the raising of the minimum charge for inland letters from half an anna to one anna, were not accepted. The increases agreed to were by comparison of minor value, and are only expected to produce 35 lakhs in the current year. Hon'ble Members will recollect the circumstances which led, by a compromise, to the adoption of a nine pie rate for letters exceeding half a tola in weight. I understand that the increased revenue from this source has been very small, not more than 10 lakhs; it has also led to many administrative difficulties in the matter of weighing letters and collecting overcharges so much so that I am told that the collection of over-charges is not worth the revenue obtained, and altogether the inconvenience that has been caused to the public has not been commensurate with the gain to the exchequer. We shall now ask the legislature to reconsider the position which it took up last year. I admit now, as I admitted then, the enormous advantage to a country of a cheap postal service nor do I underestimate in any way the strong sentimental attachment that must exist to the pice postcard. My reply to such considerations, now as then, is financial necessity; with the enormous increase in the cost of working that has occurred in recent years, the country cannot afford to maintain a postal service at the present cheap rates. We propose therefore to raise to half an anna the quarter anna postcard, and, secondly, to abolish the half anna and 9 pie rates for letters, making the charges in future one anna for letters not exceeding $2\frac{1}{2}$ tolas in weight, and one anna for every additional $2\frac{1}{2}$ tolas. We estimate that the increased revenue obtainable from these measures will be 1,60 lakhs. I may point out that, even after these changes, we shall still on the whole have the cheapest postal service in the world.

These two measures, namely, the increase in railway passenger fares and the increase in postal rates, will represent a total increased revenue of 7,60 lakhs, reducing our estimated deficit from 31 crores 76 lakhs to 24 crores 16 lakhs. I now turn to the further measures which we consider that the financial position of the country renders imperative.

PROPOSALS FOR ADDITIONAL TAXATION.

The problem of how to raise a large

amount of additional revenue through increased taxation, with the minimum of hardship to the taxpayer and the minimum of disturbance to trade and commerce has, I need hardly say, been the subject of anxious consideration for sometime. The burden which the country is now invited to shoulder is a heavy one; we have done our best to distribute it as equitably as possible and to see that all classes of the community shall contribute, each according to his capacity. When additional revenues are required, the first head to which one's thought naturally turns is customs. Here, we are at once confronted with the fact that a Fiscal Commission is now sitting, and if the needs of our revenues were not so urgent, we should have preferred to await the conclusion of that Commission's deliberations before proposing any further alteration of the tariff. Any such postponement is, however, impossible. Whatever opinions may be held on the various important issues that the Fiscal Commission is now considering, and whatever decision may be ultimately arrived at on its report, there is no escaping the conclusion that the pressure of financial necessity must in any case inevitably involve the raising of our customs duties, purely for revenue producing purposes irrespective of what the effect may be in the case of any particular tariff head in the direction of protection, Imperial preference or free trade. In framing our proposals, we have, however, endeavoured to preserve to the greatest possible extent the general character of the present tariff and the general relation *inter se* of the various duties; in other words, we have endeavoured to limit our proposals in such a way as not to involve any important change of principle in the existing fiscal arrangements.

DETAILS OF CUSTOMS PROPOSALS.

(1) The vast majority of customs duties necessarily fall upon the consumer, and the general character of the proposals which I am about to mention is, therefore, that of a tax on consumption. We propose to raise to 15% the import duty on all articles now assessed to 11%. But since one of the most important articles, both of import and of consumption, is piece goods, we propose that the consumption of piece-goods in this country should be taxed by a further 4%, that is to say, we should raise the cotton excise duty from $3\frac{1}{2}$ to $7\frac{1}{2}$ %. The combined effect of these two measures is estimated to bring in an increased revenue of 5,45 lakhs. We have not of course, overlooked the contentious history of the cotton excise duty, but after the account that I have given this morning of our financial necessities, and

after what I have just said regarding the raising of the general *ad-valorem* duty, I do not think that even the most malignant of our critics can accuse us of raising the cotton excise duty for the purpose of counterbalancing the import duty on foreign manufactures.

(2) The present import duty on machinery, iron and steel, and railway material, is only 2½%. We propose to raise this to 10%, yielding an extra revenue of 4,05 lakhs.

(3) We consider that the trade in foreign sugarcane, should bear an increase of duty, and we propose to raise the present import duty from 15 to 25%, yielding an extra revenue of 2 crores.

(4) We propose to raise the specific duty of 12 annas per gross boxes of matches to Rs. 8 per gross boxes, yielding an estimated additional revenue of 95 lakhs.

(5) We propose to impose an excise duty of 1 anna per gallon on kerosene produced in India, with a corresponding increase in the duty on imported petroleum, namely from 1½ annas to 2½ annas per gallon, the extra revenue from which measures will be 90 lakhs.

(6) Last March we joined many Hon. Members in resisting in this House a proposal to remove yarn from the free list. We feel that the arguments then used must now yield to our financial necessities, and we propose to ask the House to agree to an import duty of 5% on imported yarn, yielding a revenue of half a crore.

(7) The imports of articles which are assessed at the highest rate of tariff, namely, 20% have, during the greater part of this year, been very disappointing. I do not think, however, that this decrease can fairly be attributed to the new duty imposed last March; but rather to the very excessive imports, and consequent over-stocking, of the previous year. More recently, the imports of these articles have sensibly increased. We consider that the rate of duty can now be increased from 20 to 30%, yielding an extra revenue of 75 lakhs.

(8) As regards alcoholic liquors, the customs returns show that any attempt to increase the import duty on wines would almost certainly result in an actual loss of revenue. but as regards ale and beer, liquors and spirits, although we should have preferred to have waited another year before raising the duties further, we cannot afford to neglect any possible increase of revenue in the coming year, however small. Moreover, when we are proposing heavy additional taxation, affecting many necessities of life, we think it is all the more imperative to take from alcohol the maximum

revenue possible. We accordingly propose an increase of approximately 20% in the duties on all alcoholic liquors, except wines, yielding an extra revenue of 30 lakhs.

The actual increase, proposed are as follows:—

	Present rate of duty.		Proposed rate.	
	Rs.	A.	Rs.	A.
Ale, beer, porter, cider and other fermented liquors per gallon	0	6½	0	8
Perfumed spirits, per gallon	30	0	36	0
Liqueurs, untested per gallon	25	0	30	0
Liqueurs, tested, per proof gallon	18	12	21	14
All other spirits per proof gallon	18	12	21	14

No change is proposed in the duty on denatured spirits.

As regards tobacco, we do not think that for the present, having regard to the great decrease in consumption, any further increase in duty is possible without actual detriment to the revenue.

The total increased revenue obtainable next year from the increases in customs, which I have now mentioned, is estimated at 14,90 lakhs. Full details will be found in the schedule to the Finance Bill which I shall ask your permission, Sir, to introduce this morning. The extra revenue during the current month is likely to be 80 lakhs.

INCOME-TAX AND SUPERTAX.

These measures will still leave an uncovered deficit of about 9¼ crores. We feel it necessary to make a further call on the payers of income-tax and super-tax. We do not propose, however, to effect any alteration in the rate of tax payable by persons whose incomes do not exceed Rs. 30,000 a year. Indeed an increase in those rates, even by a substantial amount, would not be likely to produce any large increase in revenue, seeing that most of our income-tax revenue comes from assessment made at the highest rate. We propose to raise the rate on incomes between Rs. 30,000 and Rs. 40,000 from 14 to 15 pies, and on incomes above Rs. 40,000 from 16 to 18 pies. As regards super-tax, we propose to regrade the higher rates, working up in the manner shown in the schedule to the Finance Bill to the highest rate of 6 annas as against the existing highest rate of 4 annas. The combined effect of these two measures is estimated to produce an extra revenue of 2¼ crores.

SALT.

Finally, we consider that the present emergency is such that there is now no alternative but to increase the salt duty, which has always been regarded as our ultimate reserve. We propose to increase the duty from Re. 1-4 to Re. 2-8 a maund. The present consumption of salt in India works out at about 6 seers per head of population. The increase of Re. 1-4 per maund, therefore, will represent 3 annas per head per annum, or let us say, 12 annas per annum for each household of four. It cannot surely be maintained that this will be felt appreciably by even the poorest classes. The extra revenue is estimated at 5 crores a year, but in the first year, owing to the existence of the credit system of sales, is not likely to exceed 4,30 lakhs. As in the case of the increased customs duties the increase in the salt duty will come into force from to-day and the extra revenue in the current month is estimated at 20 lakhs.

The total extra revenue obtainable from the measures which I have mentioned to-day is estimated at slightly over 29 crores next year and at one crore in the current year. The uncovered deficit will therefore be $2\frac{3}{4}$ crores together with the indeterminate liability to which I have already alluded in regard to Waziristan. Financial considerations by themselves would involve the imposition of a further taxation of at least 3 crores in order that we might fully establish equilibrium. After very careful consideration, however, we do not feel justified in asking the legislature to agree to the imposition of additional taxation beyond that which I have already mentioned. But the existence of any uncovered deficit is in present circumstances, a matter for anxiety; and we can only hope that by a combination of strict economy in every direction, together with an expansion of our revenues by a steady revival in trade, we shall before long arrive at a position of equilibrium, for I must warn the House that unless equilibrium between revenue and expenditure is arrived at in the near future, the financial position and credit of the country will inevitably suffer a rapid deterioration.

WAYS AND MEANS.

I have had a good deal to say to the House this morning regarding the state of the ordinary revenues of the country and the expenditure which is debitable to our revenue account. I must now turn to that part

of our financial administration generally known as "Ways and means." I know that some people are inclined to fight little shy of ways and means matters because of the technicalities which are inseparable from the subject. But on this occasion I must invite Hon. Members to give their particular attention to the main facts regarding our ways and means operations in the current and coming years, for there is this year more than the usual connection between our revenue and our ways and means accounts. In the days of many of my more fortunate predecessors, the existence of substantial revenue surplus was frequently relied on to supply funds for financing our capital liabilities. There was much to be said for that cautious and conservative policy, which aimed at limiting strictly the amount of our borrowing and thus undoubtedly helped to place India's financial credit in the high position which it occupied. There was, however, something to be said on the other side, and there must be many here who remember Mr. Gokhale's trenchant criticism of continued large surplus which should, he contended, have been devoted primarily to the relief of taxation. During more recent years, however, we have unfortunately seen the other side of the picture, and I have already portrayed something of the difficulties which my department has encountered in finding the actual cash to finance a series of revenue deficits. Indeed, it is because we are now obviously approaching the end of our resources as regards financing deficits that we have felt obliged, quite apart from all other considerations, to ask the House to agree to drastic measures in order to attempt to bridge the gulf between our revenue and our expenditure. I have shown that during the past four years we have had to find resources amounting to no less than 90 crores in respect of revenue deficits, including no less than 34 crores in the current year. In speaking of next year's deficit I have already emphasised the grave dangers involved by our attempting to continue to live on our credit in order to meet current expenditure. The facts and figures which I shall now give the House will show how this liability has handicapped us in our ways and means operations, has forced us to borrow large sums at high rates of interest, and has prevented us from reducing the dangerously high amount of our floating debt.

I will first give the House a brief description of the other capital liabilities, besides this deficit, that we have had to meet, and

of those which we expect to have to finance during the coming year.

[IN CRORES OF RS.]
Budget for

	1921-22	1922-23
Liabilities.		
(i) Drawings of and loans to Provincial Governments	12.2	9.8
(ii) Railway capital outlay	23.0	30.0
(iii) Delhi and Telegraph capital outlay	2.7	3.5
(iv) Discharge of debt	19.2	7.9
(v) Revenue deficit	33.0	2.7
(vi) Net discharge of Treasury bills issued to the public .. ..	..	4.0
Total	90.1	57.9

MET AS FOLLOWS :—

(a) Rupee loan	49.2	25.0
(b) Sterling loan (converted at 1s. 4d.)	23.0	26.4
(c) Increase in Treasury bills issued to the public	2.8	..
(d) Credits from exchange	5.7	1.7
(e) Arrear recoveries from Mesopotamian Government	8.0	..
(f) Reduction of cash balances	2.1	1.1
(g) Net receipts from Savings Bank deposits and Cash Certificates	2.3	3.1
(h) Other items	3.0	.6
Total	90.1	57.9

THE CURRENT YEAR.

This shows we have had to meet liabilities of 90 crores in the current year, and that more than one-third thereof has been due to the revenue deficit. The Provincial Governments too have had their difficulties and have had to rely to a large extent (no less than $12\frac{1}{4}$ crores) on us to finance their deficits and capital expenditure, either by actually borrowing from us or by drawing on what is left of their balances with the Central Government. Altogether, then the financing of deficits, Central and Provincial combined, will account for over 45 crores, or more than half the total capital liabilities of the year. For the rest, $19\frac{1}{4}$ crores is represented by the discharge of our War Bonds, and the remainder by capital outlay on Railways, Delhi, and

Telegraphs. In order to meet these large liabilities we have had, in the first place, sundry assets and receipts, amounting to 15 crores, which I need not specify individually. To meet the remainder we have had to raise rupee and sterling loans to an extent considerably greater than we had budgeted for. It will be seen that in India and London combined we have raised no less than $72\frac{1}{4}$ crores of rupees in new loans. That of course is a very large sum to raise, and we have only been able to do so partly because of the stagnation of trade in this country, which made Government securities almost the only available means of investment, and partly because of distinctly favourable conditions in the London money market. Finally, as a result of our heavy liabilities to finance deficits, we have been quite unable to effect any reduction in our floating debt; on the contrary, there will, we anticipate, be an increase of about $2\frac{3}{4}$ crores in the amount of treasury bill outstanding with the public at the end of the year.

As regards next year, we hope that if the House will second our efforts to increase our ordinary revenues, we shall not have such a large sum to find in order to finance revenue deficits, though, apart from the Central Government's deficit of $2\frac{3}{4}$ crores, we have been warned that we may have to find nearly 10 crores, in the shape either of advances to Provincial Governments to enable them to carry on, or of drawings on their balances by such Provinces, as will have any balances left. We have to find nearly 8 crores for the repayment of 1922 War Bonds, some $1\frac{1}{2}$ crores in respect of capital outlay on the Telegraph Department and 2 crores for expenditure on the new capital at Delhi, for this House has already decided that, if only in the interests of economy, it is desirable that this work should be completed as soon as possible, and 2 crores is the total amount which the engineers expect to be able to spend in the year. We are also budgeting for a reduction of 4 crores in the outstanding of treasury bills with the public. I have already said sufficient on this matter to indicate the imperative necessity of our not allowing our floating debt to remain at the present dangerously high level. There remains only the provision of 30 crores for capital expenditure on Railways, as against 23 crores that we expect to spend in the current year. My Hon'ble Colleague in charge of the Railway Department will, I understand, bring before the House in the current session

the recommendations made by the Committee of the two Houses of the Legislature which met in December last to consider the question of our Railway capital programme. I will not anticipate here the discussion which will no doubt then take place. All I will say is that, great as are the liabilities thrown upon our ways and means, resources in other directions, it would in my opinion, be a short-sighted policy and detrimental to the trade and prosperity of the country, if we hesitated to take all possible steps to restore our railway lines to the condition demanded by the travelling public and the country's trade. This 30 crores will be practically all devoted to the improvement of existing lines; there is no provision for any new construction, except a small amount, under 2 crores, for the completion of new lines already in progress.

HOW TO BE MET.

Apart from certain miscellaneous receipts such as savings bank deposits, we must rely entirely upon our borrowings in order to finance this liability. For the purpose of these estimates, we have entered a rupee borrowing of Rs. 25 crores and a sterling borrowing of £17½ millions, the latter figure being inclusive of about £2 million which will be realised next year out of the sterling loan of £10 millions floated in December last. We thus anticipate next year a total borrowing of 51½ crores, though we do not of course bind ourselves to distribute our borrowings as between India and England in the particular proportion I have mentioned; this must depend upon market conditions during the year. As the House is probably aware, it is by no means certain that the recent favourable conditions as regards sterling borrowing may continue throughout next year. Hitherto, Indian sterling stock has occupied a very high place among what are known as gilt-edged securities. For the first time for very many years, Indian securities recently had a sudden, but fortunately only temporary set back in popularity owing to apprehensions, felt in the United Kingdom regarding the internal situation in this country. Brief as was the period of depression, the incident nevertheless carries its own warning, and I feel that it would be unsafe to count on a total borrowing, in rupees and sterling combined, larger than that for which we have taken credit. As regards rupee borrowing there are, moreover, two considerations to be borne in mind. In the first place, we must remember that any appreciable revival in trade must inevitably lead to other chan-

nels of investment for those people who during the past two years have subscribed to our loans. Secondly, several of the Provincial Governments will themselves be entering the market, one of them at all events to a very substantial extent. Altogether, if we look ahead for the next few years, we have to remember that our essential capital liabilities, namely, the provision of an adequate railway programme and the repayment of our short-term bonds, represent a total sum which will strain our borrowing capacity to the utmost, and every serious thinker will, I believe, agree that to rely to any substantial extent on our annual borrowings to finance large revenue deficits and to provide us with funds for carrying on the ordinary day to day administration is out of the question.

FUNDS FOR SECRETARY OF STATE.

So far I have dealt with our ways and means position taking our balances in India and England together. It is now necessary however, that I should give some explanation of the position at our Home Treasury for as the House will see, this is likely to have an important bearing upon our general currency and exchange arrangements. In normal times the usual procedure for keeping the Home Treasury in funds is for the Secretary of State to sell Council Bills upon India. No Council Bills have however been sold since 1919, the reason being that there has been no trade demand for them, while the Secretary of State has been able to keep himself in funds by recoveries made by him from the Home Government in respect of expenditure incurred by us on their behalf in India and Mesopotamia, this operating in effect, as a remittance from us to the Secretary of State. In one financial year, namely, 1918-19 our recoveries from the Home Government were no less than £92 millions. Since then owing to the closing down of the Mesopotamian operations and the gradual disbandment of the additional troops that had been raised during the war for service overseas these recoveries have greatly diminished, and during the current year, we only expect the Secretary of State to recover about £25 millions, while during next year we do not expect that he will recover more than £9½ millions. His total liabilities, including the ordinary home charges, together with about £18½ millions on account of purchases in Europe of railways material and stock, are expected to amount to about £52¼ millions. There is therefore a substantial deficit in his resources. How is that to be supplied? I have already

mentioned that he hopes to obtain about £17½ millions from sterling borrowings. Assuming that he will succeed in raising this large amount, there will still remain a gap of £18 millions, which will have to be covered by a transfer of funds from India to England. Now there are only two possible ways of making this remittance; the Secretary of State must draw on us, either through the sterling reserves or by the sale of Council Bills. It is necessary that I say a few words about each of these methods of remitting funds to him.

THE STERLING RESERVES.

As regards the former, namely, the transfer of our sterling reserves from England to India, there will be in England at the beginning of the financial year about £5¼ millions of the Paper Currency Reserve and £40 millions in the Gold Standard Reserve. Both of these are held mainly in the form of British Treasury Bills, which are readily convertible into cash. The Secretary of State can, therefore, to the extent of his requirements, draw on those reserves, provided of course (and the House will soon see that the proviso is an important one) that we earmark the necessary funds in India for credit to those reserves, the net result being a transfer of the reserves from England to India. In the case of the Paper Currency Reserve we should at this end cancel notes to an amount equivalent to the British Treasury Bills sold out by him, thus reducing the circulation to that extent. In the case of the Gold Standard Reserve, we should have to earmark funds for credit to that reserve in India; we propose to do this by earmarking gold, *i.e.*, we should transfer gold from the Paper Currency Reserve, which contains £24 millions, in sovereigns and gold bullion, to the Gold Standard Reserve. But here again, in order to be able to make this transfer, we should of course have to make equivalent payments to Currency Reserve, and thus cancel notes to the necessary extent. So, whether the Secretary of State draws through the Paper Currency Reserve or through the Gold Standard Reserve, the net result is a cancellation of notes in this country. That is the operation generally known as "deflation," and I use the word for the reason that this is the actual effect of such drawings, and not because we consider that circumstances justify a policy of deflation on its own merits. But when one looks at this matter practically, the question at once arises, whether we could in fact effect cancellation to the

necessary extent. I must point out moreover that deflation in order to put the Secretary of State in funds does not represent the whole of the cancellation necessary, seeing that under the Paper Currency Act we are bound to apply the interest on our Paper Currency Reserve investments to the cancellation of notes issued against our *ad hoc* securities in India, and further, we have also undertaken to apply to the same purpose any excess in the Gold Standard Reserve over and above the figure of £40 millions. The deflation in respect of these two items will amount next year to about 6 crores, and when added to the deflation necessary on our present estimates to put the Secretary of State in funds, represent a total sum of 33 crores. I have only to mention this amount for the House to judge of the practicability of cancelling 33 crores of notes out of a total circulation of about 1,70 crores. I need not elaborate this point, for it is one which all bankers and financiers, and indeed most business men will at once appreciate. Every crore of notes cancelled by us means a withdrawal of a crore of notes from the money markets, with a proportionate tightening of money. By cancelling notes at judiciously chosen opportunities, we hope to be able to provide some portion of the Secretary of State's requirements in the coming year in this manner; and of course deflation, if carried out with caution and with due regard to the legitimate needs of trade, has, as the economists tell us, a valuable effect in reducing the general level of internal prices. But, as recent experience in other countries has shown, there is an obvious limit to which we can or should go in this direction, and we recognize fully the responsibility on us not to go too far, or to produce such a sudden or rapid stringency as might lead to a dangerously acute position.

If the House has followed me in my remarks regarding the possibilities of deflation, it will be clear to it that to the extent which our deflation falls short of the amount which we at present estimate as necessary to keep the Secretary of State in funds, it will be necessary for him to sell Council Bills. We have not entered any figure in the estimates for a remittance through Council Bills, and have for the present shown the whole remittance as effected through the sterling reserves, but of course we hold ourselves free should circumstances require and the state of the exchange market permit, to make remittances by Councils. Further, the facts and

figures which I have given to the House must dispose of any apprehension that the business community in India may still feel as regards the Secretary of State's unlimited powers to force up exchange to the two shilling level.

FINANCES OF THE PROVINCES.

Now that the provincial Governments have almost complete financial autonomy, it would ordinarily be unnecessary for me to make any reference to their financial operations. What I have already said, however, regarding the difficulties in which the provinces now find themselves, and their effect upon our general ways and means operations, makes it desirable that I should make a few observations on the All-India position. A few facts will suffice to show the general position in the provinces. At the beginning of the current year the total provincial balances were 16.16 crores, while at the end of the next year the aggregate balances are expected to be only $5\frac{1}{2}$ crores, even after allowing both for the various loans which several provincial Governments have raised or will have raised, during the two years, and also for the proceeds of extra taxation which several provinces are imposing for their own purposes. Further, there is not a single province which, according to our present information, is not budgeting for a deficit next year. I am not in a position to give full figures, because several provincial budgets have not yet been presented, but the House may take it as reasonably correct when I say that, taking the provinces as a whole, their expenditure next year (omitting of course expenditure of a capital nature which will be defrayed from loan funds) will exceed their revenues by an amount of about 8 crores. Several of the provinces, will by the end of the current year have already exhausted the balances which we keep for them as their bankers, and at least one of the major provinces will have to take a substantial advance from us merely in order to carry on. The position of the Central Government's own finances, as I have endeavoured to explain to the House this morning, shows that there can be no question of our attempting to reduce the provincial contributions of $9\frac{1}{4}$ crores in the immediate future. To do so would merely increase our own uncovered deficit, and the net result would be exactly the same whichever course we adopted, for, whether the All-India deficit be regarded as completely central, or partly central and partly provincial, it will have to be financed mainly on the credit of the Central Government. The problem, therefore, is really an

All-India one. The great difficulties in which most of the provinces find themselves have led in many cases to requests in non-official quarters that what is known as the Meston Settlement should be revised. I am not quite sure how far such requests are put forward with the object of obtaining a different distribution of the total contributions between the provinces, or merely represent requests for the acceleration of the abolition of the contributions. I must, however, point out that any attempt to wipe the Meston Settlement off the slate might have a very different result from what is sometimes anticipated. Lord Meston's Committee worked on our assumption that the deficit of the Central Government at the initiation of the Reforms, to be made good from contributions from the Provinces, would be 9.83 lakhs. Now, that figure was arrived at upon various assumptions, two of them which were of great importance. The first was the 2 shilling rate of exchange; the second a military budget of 43 crores. The non-realization of the first assumption means, on the present figures of our Home charges, a difference to us of no less than $15\frac{1}{2}$ crores a year. As for the military budget, although the strength of the Army is not greater (it is indeed somewhat less) than the pre-war strength, the cost is some 20 crores higher than the 43 crores we assumed. I would ask therefore, those who desire to see that settlement upset, to consider whether an impartial committee, now arriving in India to effect a new settlement, might not take a very different view as to the amount of the contributions necessary from the provinces in order to enable the Central Government to discharge its fundamental duty of securing the country's defence, maintaining internal peace, and the service of the national debt.

Knowing, however, the difficulties which each Local Government has to face, we consider that the time has come when it is desirable for us to discuss the whole position with them, in order that we may exchange ideas and learn something of each other's difficulties. We propose, therefore, as soon as convenient, to invite the financial officials of each Local Government to a conference, in order to discuss the general position as regards the contributions, and at the same time to take the opportunity of examining the problems which each province has to face in the matter of financing capital outlay on irrigation and other schemes for which the provinces are now responsible.

CONCLUSION.

And now, Sir, I can conclude my task. For us, for the Provincial Governments, for the country at large, the year has been a difficult and disappointing one, nor is there yet any clear promise of an early lifting of the clouds which veil the horizon of our finances. We can only address ourselves with what determination we can command to the task of finding a solution for the urgent problems which immediately confront us. One fact, I think, stands out in prominence; the overwhelming importance of India's trade and exchange of world factors over which we have no control. Any attempt to devise remedies as if India were a separate entity, divorced from world conditions, would be doomed to failure. A second fact is also clear; that the world at large, and we also with other countries, have underestimated the period of convalescence necessary for

recovery from the maladies of the war. I need not labour the point, for wherever you look, whether towards Central Europe, or to the United Kingdom, or even to America, it is now clear that the problems are so stupendous that recovery cannot be other than slow. But the conclusion seems to me equally clear. If our troubles are due to world causes, we must move in line with the best thinkers of the outside world in seeking the remedy, and the one solution which they can indicate for the difficulties in which State finance now everywhere finds itself, is the deliberate attempt at any any cost and at any inconvenience to make revenue meet expenditure. India's financial credit has stood high with the world in the past; if she is to maintain this, and if she is to make good what is of equal importance, her political credit with the world, she cannot afford to falter in applying the obvious and inevitable remedy which the situation demands.

Ceylon Hemp-growing Prospects.

The preliminary venture of the Ceylon Hemp and Produce Syndicate in growing sisal has proved successful. To encourage sisal growing, the Ceylon Government has just transferred on special terms to the Ceylon Hemp and Produce Syndicate 120 acres of Crown land, adjoining its present hemp estate at Maduruwagama in the North Central Province.

An advantageous method of cropping sisal is to pay contractors to cut, bundle, and deliver leaves at the central factory at the rate of Rs. 2 per 2,500 leaves. About 80,000 leaves, thrashed, rinsed, and combed, will yield one to one-and-a-half tons of fibre. A machine which could handle this quantity of leaf a day will suffice for a 500-acre estate. The first crop matures in three years. On this an approximate profit of £30 could be made if fibre realized £40 a ton. Afterwards, with fair cultivation, cropping goes on regularly on an annual basis of £20-£30 profit per acre. This profit could be greatly increased by installing machinery to manufacture fishing nets, sail-cloth, carpets, mats, bagging, twine and rope, out of the fibre; and acetic acid, vinegar, paper pulp or paper, potash, and a wax largely used in the insulation of marine cables out of the waste residue. There is a large demand for all the articles enumerated, most of which are now manufactured in Europe and the United States.

The Ceylon Agricultural Society has now taken up the growing of Mauritius hemp and Rozelle fibre. Reports on the prospects of growing these two plants on a profitable basis will soon be issued.

Upon a sample of Rozelle fibre submitted by the Malaya Agricultural Society, the Imperial Institute has reported that the fibre is quite suitable for spinning either alone or in conjunction with jute. It is likely to realize £45 per ton in London, or the value of first class Bengal jute. In commercial quantities it would sell readily in the United Kingdom. What about sisal prospects in Bangalore?

Important results are stated to have been attained at the International Air Conference at The Hague. The meetings were not public but the correspondent of the "Amsterdam Telegraaf" was told by the manager of the German Luft Reederie that this concern was now supported by the A.E.G., the Hapag, the Zeppelin, and the Metallgesellschaft. In addition to this the Luft Reederei has a financial subsidy from the Government. After January 1, 1923, the Luft Reederei will be allowed to run services outside Germany and after May 5 next, Germany will be allowed to build aeroplanes again, except war planes. On May 3, the direct line between Königsberg and Moscow will be opened with Russian machines supplied by the Soviet Government.

Patna University Address.*

By the Lord Bishop of Calcutta.

After appreciating the very high honour done to him by His Excellency in asking him to address the Convocation, the Lord Bishop said that he could not claim to any of those qualities and scholarship which qualified a man to speak on occasion like that. The only justification which he felt on receiving the invitation was the fact that he was born in the family of a great scholar and from the time he was at the age of 7 till he left his homes for the work of his life he resided in a famous University town where it was his daily experience to see and hear the eminent professors under the influence of some of whom who took notice of him, he received the stimulus in his youthful love of Science. Proceeding he said that seventy years ago when the eminent Professor Cardinal Newman was agitating to establish the great University of Ireland in Dublin he had delivered a series of addresses to advocate the purpose which was to give education to the Roman Catholic students who shared their own religious convictions and during that course of his address he gave an idea of what a University should be. The speaker quoted Cardinal Newman to show that the ideal of a University was intellectual and not moral, and on the other hand, it was the diffusion and extension of knowledge rather than its advancement. He recalled Miss Follett's dictum in the "New State". "We can never take on a past ideal for a present need." But he believed there were many to-day in India and in this Province who would endorse that view of a University and yet he felt it was fundamentally wrong, not only in that it seemed to suggest a false derivation for the title "University" as applied to certain educational institutions, but because it described as rivals two aims of a University which were in fact essentially complementary. It should not be thought that he wished to minimise the functions of a University or regarded the diffusion and extension of knowledge as anything but a most important part of the work of a University. It had recently been emphasized with characteristic vigour by that distinguished scholar who watched over the fortunes of India's oldest University. When delivering a Convocation address at Lahore, Sir Ashutosh Mukherji urged that it was a "paramount necessity that in a university, worthy of the

name, the course of instruction should cover the whole field of human thought and intellectual activity so that she might participate to the fullest extent in the diffusion and extension of knowledge and she might be in a position to satisfy the requirements of all the students who might flock to her gate actuated by various kinds of needs and desires." It was perhaps natural that a man of so versatile a genius as the Vice-Chancellor of the Calcutta University, which had got students far greater in number than any other University, should thus describe what a University should do. But the phrase, the Bishop said, "a University worthy of the name" suggests that he had fallen into a popular mistake regarding the meaning of the term University. It was derived from the Latin word *Universitas* which was first found in a manuscript dated in the early part of the thirteenth century relating to the University of Oxford. There the phrase occurred which meant "a society of fellowship of teachers and scholars". A university, said the lecturer, was not a kind of intellectual emporium, a scholastic Whiteaway Laidlaw, designed to supply every intellectual want that was felt but a fellowship of men engaged in the common pursuit of learning, but at different stages on the road. Fellowship and research, those were the characteristics of the first universities. Their successors would do well to emulate them. Further, he pointed out that his statement really involved two distinct principles and that it was possible to accept the one while dissenting from the other. It was well no doubt, that every student should be able to find a place where he could, under proper direction, pursue the study of the subject of his choice, but surely that did not mean that one and the same university should attempt to provide for the pursuit of every possible branch of knowledge. Such, at any rate, was not the view of those responsible for the development of University education in his own country during the past century. Leeds and Manchester, Birmingham and Bristol were not mere replicas of the older foundations of Oxford and Cambridge but they had specialized in those subjects which were most intimately associated with the life and work of the people among whom they were situated. They were no less Universities because the range of subjects

* Convocation Address delivered before Patna University on March 27, 1922.

which they offered to students was limited nor could they be regarded as less potent agencies for the enrichment of national life, because they refused to dissipate their resources upon the study of a large number of subjects than they could adequately maintain. They concentrated their attention on the thorough pursuit of a few branches of learning and it had been said that personal success could only be achieved by the acceptance of "resolved limitations" and he would urge that that was true also in the case of Indian University at any rate with the resources which are at present at their disposal.

Surely thoroughness should be the first characteristic of a University. The reputation of a University as a seat of learning could depend on the standard of scholarship which it maintained within its walls and on the character of the students who passed out from its portals. The two were intimately related. Here the speaker quoted the views of a History Professor at Cambridge on his duty as a Professor, which he feared would shock some of those present to-day. In his inaugural lecture the learned professor announced the principle which would govern his choice of subjects. "I do not wish ever to lecture on any period offered for examination." He was a University Professor responsible for the promotion of the study of the subject which had been entrusted to him. He could achieve his purpose by the education of that select body of students who were capable of profiting by his teaching. "To him", said his biographer, "the important thing in all education was not the knowledge which teacher supplied but the temper he created the aim of all study was the education in method. It ought to develop the power of observation rather than supply opinions." In these words were stated what was now a generally accepted principle of education from its earliest stages. In teaching kindergarten the teacher took out children for natural study, trained their eyes to see and ears to hear and developed and directed that spirit of enquiry which was natural to childhood, and which should survive, disciplined but undiminished, in the scholar of mature years. But it would not be so unless those who guided his later studies were themselves keen students and seekers after truth; it was the research worker who could stimulate the spirit of enquiry in his students. It was a criticism passed upon Professor Seely's work at Cambridge that while there was no doubt about his genuine love of learning, yet his influence did not tend towards gathering a body

of students around him or creating a scientific historical school such as had grown up round a distinguished professor at Oxford. The Bishop looked forward to the establishment of such a school of history in the University of Patna which should glean rich treasures from the mass of manuscripts which was being collected and from those ancient remains in which the province abounded. Proceeding the speaker remarked that they could only make a student by being a student, the enthusiasm of learning in the teacher beget a like spirit in his pupils. But Cardinal Newman had referred to the University records in support of his contention that the discovery of fresh knowledge was not the work of University professors. He had little knowledge of the university to which he belonged. But he claimed that in the case of his university the professors did combine with the work of diffusing knowledge the spirit of research. When he looked back to the time when he lived at Cambridge as a boy and student, names arose in his memory, of those Professors, belonging to different faculties, whose own researches were enlarging the borders of that branch of knowledge they had made their own and brought honour to the University which they served. He would refer to but one branch of study. In that same row of houses in which his father, himself a professor, lived, were to be found Professors Clarke Maxwell and Sir James Dewar, while not far away lived Sir George Stokes. When Professor Maxwell died while still young man, he was succeeded in the Chair of Experimental Physics by Lord Rayleigh. Would any student of Science be found to say that these men did not in their own days advance our knowledge of physical science? To-day a brilliant group of teachers and students under Sir J. J. Thompson still maintained the reputation of that ancient University. It was from a school such as that that men went forth to spread knowledge and to stimulate the spirit of discovery. Why should there not be such a school of science here? But you must encourage your professors to study and not demand of them a tale of lectures which left no leisure for it, if in their turn they were to send forth men who could discover the treasures, material and spiritual, of this great country and find out the means by which national life could be truly enriched thereby.

It had been suggested that the idea of a University was borrowed from the ancient Guilds and was intended to be a scholastic Guild, a society of teachers and scholars

designed to secure for its members, often drawn from foreign countries, protection of the townsmen and from the annoyances incidental in mediæval times to residence in a foreign state. Perhaps a modern scholar was translating this idea into terms of his own time, when he maintained that his college was then "exercising its proper function when it was counteracting popular fallacies of the day."

This University would be fulfilling what might be an original function of such an institution and was still to-day held by many to be an important one, if in the face of the popular demand for more lectures and leisure for its Professors, it insisted on securing for its professorial staff adequate opportunity for that patient study and painstaking research which was essential if the degrees which the University conferred upon its students were not to be devoid of that significance which they were intended to possess. For, degrees, he would remind them, were instituted in the thirteenth century to certify the public of the fitness of those possessing them to give instructions in those subjects in which they had been examined. The possession of the Bachelor's or Master's degrees carried with it the guarantee that the holder was qualified to teach in either a subordinate or an independent position. To-day they did not regard mere knowledge of a subject apart from acquaintance with method and technique of the teachers as qualifying a man to become a teacher, but apart from his special and now almost forgotten significance of the degree if it was to be the hallmark of the genuine student, those who were deemed worthy of them ought at least to have been imbued with the true student spirit, the love of knowledge and the desire to search for it.

The speaker went on to say that he had almost substituted a different word for "knowledge" one with a double significance, for the moral quality which truth denoted was a prerequisite for those who would be searching to find out knowledge. That was why he could not admit that a University was concerned with intellectual and not moral education. Life was a whole and its parts were interdependent; the two must go hand in hand if the best results were to be obtained.

That the health of the body was not independent of the spirit which indwells it was truth which psychology insisted on with increasing emphasis. Was it not equally true that character and scholarship were similarly related?

He delighted to recall some of the triumphs of modern research and to think of the moral qualities which made them possible. He

thought of Lord Rayleigh and Professor Ramsay and their experiments for determining the density of Nitrogen and hardly knew which to admire most—the confidence justified by repeated trial, which refused to attribute to any error of experiment the different results obtained when using samples of the gas prepared by different processes, or the magnificent loyalty to truth which refused to ignore a difference which had seemed to their eminent predecessor, Cavendish to be negligible. This confidence in the accuracy of their own work and this splendid determination to be loyal to the fact as they saw them, led to the discovery of three new elements. Surely, the discovery was as much the fruit of moral character as of intellectual ability.

On the monument erected in St. Paul's Cathedral in London, to a great historian was inscribed the noble epitaph: He strove to write true history. How different might the political situation in India have been to-day and indeed how quickly might it not now improve if the character attributed in this epitaph to a dead historian might, with equal truth, be ascribed to all the living writers who claimed to narrate the story of current events, if the same endeavour to sift and weigh evidence and to appraise justly the value of each item, the same stern refusal to pass an opinion till all the facts material to the case had been assiduously collected, or to sacrifice truth in the interest of a preconceived theory, if the same determination to be absolutely fair to those whom he differed, that characterized Dr. Creighton were universally true of that army of journalists who seek to mould public opinion to-day!! He admitted that the journalists avowedly existed to advocate particular views, but only because he believed that truth was many-sided. It was commonly said that there were two sides to every question, whatever the view expressed if it sprang from the mind of the true student, one imbued with the love of truth it would bear on its face the expression of the spirit which animated.

It was from the Universities that they looked for supply of such writers. It was there that men of intellect should become men of character. True scholars bold to speak the unpopular truth, determined to be exact and true.

They heard much of the quality of men to-day, and he should be untrue to the Faith that he professed did he not believe wholeheartedly in the equal value of every soul of man and the equal sacredness of the personality of each. But that did not mean necessarily equality of intellect or moral character. In every nation,

may, in the same family, they saw the widest diversity between men in these respects. It never occurred to him to claim intellectual equality with his father and eldest brother, both of whom were senior classics, but they could not play cricket as well as he did. Nor did equal intellectual ability connote of necessity moral equality. "Men are only of the same moral class when their blood boils or freezes at the same moral temperature." In English Universities strong, religious and moral influences have been brought to bear upon the students and however brilliant intellectually the students of other universities might be where this side of education was ignored it would indeed be surprising were they to produce students who, taken all round, were the moral equals of those coming from universities where this side of education was duly emphasized.

He desired to see the young men and women

of this country afforded the same opportunities for intellectual and moral development which they enjoyed in other parts of the Empire. That did not mean that Indian Universities should be slavish reproductions of British Institutions, for he had stated that within the British Isles Universities were not all of one type and were related closely to the life of the people; it should be the same here but the principles that he had urged upon them were, he believed, fundamental to all true University education, namely, if they would turn out men who were true students — searchers after truth — their University must be a place not only for the diffusion of knowledge but for its advancement and further because the search for truth demanded moral qualities of a high order they could not afford to neglect that part of education which dealt with this side of a man's life.

New Fuel Trials.

Fifty manufacturers took part in the French autumnal tractor ploughing trials, which were held this year on the eastern suburbs of Paris at the same time as the motor show. The machines were of French, British, Italian and American construction. Each participant was given a plot of land and was obliged to plough it to the satisfaction of the jury, but there was no official control over the work done, nor any attempt to classify the contestants according to order of merit. The organisers were satisfied to let each maker demonstrate to the best of his ability, leaving it to the spectators to form their own conclusions.

One of the features of the trials was the use by the Fiat tractor of French national fuel in place of petrol or paraffin. This fuel is composed of 50 per cent. benzole and 50 per cent. alcohol, and its use is being recommended by the Government in order to encourage agriculture and to make the French industry independent of foreign fuels. Better results were obtained with this fuel than with paraffin as usually employed on the Fiat tractors, the machines hauling six furrow ploughs and working to a depth of nearly eight inches, notwithstanding the very hard ground which has not been cultivated for seven years.

Owing to a temporary shortage of benzole the percentage of alcohol had to be increased on one or two days to as high as 90, but this did not affect the working of the

engine, nor was any difficulty experienced in starting up from cold. The only mechanical change made in the engine was a slight increase in compression, and, of course, the carburetter was adjusted to get the best results with this fuel. These experiments (says the "**Times of India**") were watched with great interest by farmers who are particularly interested in the use of alcohol for their tractors.

The lesson learned from the trials is that farming operations can be conducted very successfully with native-produced fuel which under present conditions is cheaper than imported petrol. This is an encouragement to the Government to develop its plan for assuring a regular supply of carburated-alcohol for use in internal combustion engines.

There is a strong demand in several centres in Jamaica for the building of light railways to assist cultivators to get their produce to shipping points. In the eastern section of the island, the Government's scheme for a 10,000-ton sugar factory having been abandoned, an agitation has been begun for a light railway. In the north-western end there is a similar movement. It is being urged that these light railways should connect the hinterland with seaports. The reason for urging the construction of light railways is that the cost of adding 70 or 80 miles to the existing standard gauge system is beyond the resources of the colony.

Training the Engineer.

By Mark Meredith, M.E.A., M.I.S.A.

A review of Britain's pre-war and early war positions leads definitely to the conclusion that she laboured under, and was handicapped by, the lack of a sufficient number of properly trained engineers. There could never be any doubt as to the ability of those who had already distinguished themselves in the scientific and productive aspects of the industry. What was lacking was not quality, but quantity. The already meagre ranks were then very seriously depleted by losses in the war. The acute position was even further accentuated by the set-back which military service made in the cases of many men who were already in training for work, which training might have improved of greater service in the later stages of the war and would undoubtedly have been an asset in any subsequent reconstruction period. An increase in the output of men thoroughly trained on the basis of a sound knowledge of fundamental principles is even now an urgent necessity. While the immediate present may not offer openings for many such men, we can only regard the present industrial depression as an episode in the history of industry. In the absence of such general appreciation of the principles and limits of existing practice there must of necessity be a lack of directive effort to further advances.

While, however, there will always be a steady demand for trained engineers, it is equally obvious that there must be increased competition for the higher positions in the industry. This, the staple industry of the country, calls for and needs men of an exceedingly high standard of education. It is doubtful whether any profession demands a higher degree of preliminary training in which a sound basis on fundamentals is conspicuously necessary. This becomes the more essential when it is remembered that modern advances are being made on what may be called the borderland of science and technology, where anything short of a good grasp of principles will fail to give an appreciation of the problems which intimately touch and overlap several of the usually recognised departments of applied science. Especially too, is this the case where research work is to be undertaken.

A few words in conclusion may be added with reference to part-time schemes of training. The large engineering and shipbuilding concerns have long recognized the value of such

education amongst a large number of youths who, at a comparatively early age enter the works. Educational work is necessary not only for the highest posts but for any moderately responsible post in an industry like that of engineering. For a long time, therefore, schemes have been in operation which allow of a proportion of the time normally spent in the works being devoted to definitely organized instruction either in the works and by a member of the works staff or at a local educational centre. This movement is undoubtedly spreading and at many technical institutions part-time day classes after a day of fatigue is being met by holding special apprentice courses late in the afternoon rather than late in the evening.

Intelligent work stands to effect a finished product more effective than mere ignorant manual labour. An increased knowledge of the simple principles of science and their application to industry will do much to elevate the mind and quicken the effort of the worker, in addition to opening up of avenues of progress which otherwise would be unapproachable, and will provide one of the finest antidotes against industrial troubles, which have been responsible for the unfortunate, but it is believed only temporary set-back in British industry.

Approximately \$1,500,000,000 worth of food and other products were sold abroad by the United States farmers during 1921, according to a report issued by the Department of Commerce. Farmers participated in the nation's total export trade to a larger extent than any other group. During the midsummer period breadstuffs were exported at the rate of 5,500,000,000lb. a month, or at a greater rate than ever before. Prior to the war breadstuffs were exported at the rate of approximately 1,000,000,000lb. a month, and during 1920 about 2,500,000,000lb. a month. In wheat alone the exports totalled 181,000,000 bushels during the six months from July to December. In the same period of 1920 the total was 176,000,000 bushels. Before the war the rate of shipment was 71,000,000 bushels.

* * *

The Supreme Court of the United States has decided that the United States Merchant Marine Law prohibits Canadian railway and steamship lines from carrying merchandise between Alaska and United States continental ports.

Financial Assistance to Traders.

The Trade Facilities Act 1921 of the United Kingdom has been republished in the "Fort St. George Gazette" dated 21-2-1922 and the attention of business firms in the Madras Presidency is invited to the facilities it grants. These are likely to be useful to firms whose plans for capital expenditure are far advanced but are held up for financial reasons. On certain conditions the Treasury of the United Kingdom is prepared to assist firms outside the United Kingdom (preferably those within the Empire) to raise money for such capital expenditure in London, by guaranteeing either the principal or interest or both. The object is to reduce unemployment in the United Kingdom by removing financial difficulties which might otherwise prevent orders being placed for machinery, plant and materials of British manufacture.

Application should be made to the Trade Facilities Act Advisory Committee of Whitehall Gardens, London S.W.1., this Committee having been formed to advise the Treasury on applications.

It is anticipated that under this scheme where the application is approved a firm may obtain the capital guaranteed at the rate of 6 per cent at an issue rate of 95, subject to such rise or fall in the current rate of interest as may have taken place since last December.

Applicants should supply information on the following points:—

(1) General particulars as to the purpose of the proposed loan stating the total amount thereof, whether the guarantee is required in respect of principal and/or interest, and details as to

Term of the loan; method of repayment and establishment of sinking fund out of profits to extinguish the loan; price at which the loan is to be redeemed.

(2) What amount will be expended in the United Kingdom, and the nature of the expenditure.

(3) The expected benefit as regards employment, giving information as to the particular industries which will be affected, and the *approximate date of commencement* and period of employment. If possible, an estimate should be given of the number of men who will be employed weekly during the first three months after work is commenced and subsequent periods (classified as far as practicable according to trades and localities). (Information as to the

present state of unemployment in the localities affected will be helpful to the Committee.)

(4) Charges which can be given to secure the loan.

On this point the Committee desire information as to the assets and revenues which will be available as security for the loan, and particulars of any existing charges thereon. These particulars should be supplemented by copies of the most recent Balance Sheets and Profit and Loss Accounts, and by a statement for, say, the last five financial years showing clearly the yearly net profits remaining after meeting all outlays and provisions (including depreciation), Excess Profits Duty and Corporation Profits Tax) and interest and Sinking fund instalments on all debentures, etc., which will rank prior to the proposed loan.

(5) The additional yearly net revenue expected to be earned as a result of the proposed expenditure.

(6) How it is proposed to pay the interest on the loan during the period of construction, whether out of existing sources of revenue or out of the proceeds of the loan.

(7) In regard to plant, machinery, or other materials to be ordered, any evidence which is available from tenders already received or otherwise to show that all reasonable steps have been taken to ensure that orders will be placed in the United Kingdom at prices competitive with those quoted by suppliers in other countries.

(8) Satisfactory evidence confirming the estimated cost of the undertaking for which the proposed loan is to be raised and that the sum asked for will, making reasonable allowances for all probable contingencies, be sufficient to complete such undertaking.

(9) Particulars as to the preliminary formalities, if any, which will be necessary before issuing the loan or commencing the work, (*e.g.*, sanction of Parliament, meetings of Proprietors, etc.)

(10) Particulars of any attempts which have already been made to finance the scheme, giving details of the terms which could have been obtained.

(11) Information as to whether any guarantee is proposed to additional security beyond specific assets and profits of the borrower for the charge.

The attention of applicants is drawn to the following statement of essential points on which the Committee must be satisfied.

which appeared in the public press on the 23rd November 1921 :—

“Before recommending the approval of an application the committee will require to be satisfied—

“(1) that the undertaking or scheme cannot reasonably be financed without State assistance.

“(2) that it is of such a nature as to reduce unemployment in the United Kingdom and by increasing the means of production or reducing their cost or otherwise to secure adequate benefit to the public in return for the public assistance given.

“Amongst applicants who satisfy the Committee on the above essential points, preference will be given to —

“(a) Applications which ensure the immediate placing and execution of orders for export.

“(b) Applications under which securities can be readily issued to the public.

“(c) Applications to which minimum of financial risk attached.

“(d) Applications which will be quickly rather than slowly completed.

“(e) Among applications from abroad, to applications from within the British Empire.

“(f) Applications under which orders will be placed in the United Kingdom on basis of prices competitive with those quoted by suppliers in other countries.”

Agriculture at the Indian Science Congress.

The proceedings began with a paper on “Improved Methods of Wheat Sowing for Central India” by Mr. H. R. Joshi of the Indore Agricultural Department wherein, he showed that the rabi sowings in Central India should be shallower and wider than they are at present. The improved methods consists in sowing with a two-tyned seed drill with the advantage that it is cheaper, quicker and productive of a larger crop out-turn.

This was followed by a lively discussion in which Mr. Bal, Professor Bhat and the President, Rao Sahib M. R. Ramaswamy Sivan, took part, the essential part of the discussion being that shallow sowing was better under wet conditions and deep sowing was preferable under dry conditions.

Next Mr. D. V. Bal, Bacteriologist of Nagpur read a paper on the relative nitrifiability of different nitrogenous organic manures in five different types of soils in the Central Provinces and Berars. It was noticed that castor cake nitrified best in all soils and the *bassia* (illuppai) cake the least. Ground-nut cake which is the richest of all oil-cakes in India nitrified best in black cotton soils while it was much slower in other types of soil. This was followed again by a lively discussion.

Mr. B. Visvanath of Coimbatore brought to the notice of the meeting that *illuppai* cake when mixed with flour phosphate showed increased bacterial activity.

The President said that work on identical lines was being carried on at Coimbatore and that so far as crop requirements were concerned estimation of total active nitrogen both in the form of ammonia and nitrates was essential.

The next paper was read by Mr. K. Audinarayana Rao of Coimbatore detailing preliminary investigations on symbiotic nitrogen fixing bacteria in the nodules of plants other than those of the leguminosae order especially in two plants *Chometia Asiastica* and *Pabetta Indica* in both of which innumerable nodules are found in the leaves. He gave an account of how the culture was prepared and the bacteria were isolated and of their properties. His conclusions regarding the nitrogen fixing power of these plants were hotly contested as not warranted by the experiments of a number of speakers. Messrs. Thirunarayana Iyengar, and Narasimhan of Mysore, Mr. Mahdi Hoosain, Mr. Bal taking part in the discussion.

The President said that the classical work of Hall, Riegel and Wilgarth required a more careful and critical experimentation than the author seemed to have bestowed on the subject.

Mr. S. R. Venkatakrishna Moodeliar of Coimbatore gave a brief historical review of the literature bearing on fungii in Southern India before the advent of the Agricultural Department. The last paper by Mr. Patvardhan of Poona was on the utilisation of the spent Mowha flowers (illuppai), after distillation. Apart from the practicability of preparing further quantities of industrial alcohol by the action of sulphuric acid, its use as a nitrogenous fertiliser and, when dried, as a cattle food was indicated. The President closed the session with a few appropriate words, Mr. Padmanabha Iyer, of Nagpur proposing a vote of thanks to the Chair.

Industrial Notes from the United States.

By Alfred T. Marks.

Washington, D.C., U.S.A., January 26 1922.—The United States is making rapid advance in its transportation facilities — and now, as a somewhat natural evolution, comes the utilization of the motor as an adjunct or auxiliary to the steam-power railways.

As an outstanding instance, the New York Central Railroad is proceeding rapidly with the development of a new type of freight car designed for use in connection with motor trucks which promise to become an essential auxiliary of steam railway transportation. The equipment engineers of that company are conducting extensive experiments with what they describe as the "container car", and they have found that with the use of motor trucks loading and unloading can be accomplished in one-fifth the time ordinarily required, and that this rapid handling of freight will enable the railroad to double the mileage of its ordinary rolling stock. Twenty-four container cars of the mail or express type and thirty for valuable freight are now in use.

The advantages claimed for the container car are that less than carload lots of freight, mail and express may be shipped with a material saving of time to both the shipper and the railroad company, in that the container car may be unloaded and reloaded much more rapidly. The car also enables the company to obtain the maximum mileage out of its rolling stock. Valuable commodities of all kinds can be transported from consignor to consignee inviolate from damage by fire, weather, breakage or theft, eliminating to a great extent rehandling, trucking and checking.

The container cars are divided into two units — the chassis and the body. The body is divided into a number of sections or containers and these are removable by crane from the chassis or gondola car on which they are held in place by means of low sides or retainers of steel.

Experiments have proven that the ideal container car has six sections for freight and nine sections for express cars. Each of the containers has a capacity of 7,000 pounds. The sections are lifted by crane from the container car to the automobile truck of the ordinary five-ton type which carts it to the door of the consignee, or *vice versa*. With the employment of eight trucks a car can be unloaded in 21 minutes and reloaded in the

same time. It is shown, therefore, that eight motor trucks can be employed advantageously for every container car added of the railroads. The New York Central, which is increasing the number of its container cars and is planning for their adoption for the transportation of milk, high grade oils, etc., is now using a truck for each container.

The replacement of the present type of rolling stock with the container car is now looked upon as a certain development of the near future, since, in addition to all of the advantages first claimed for it, American railroad officials believe that its adoption will enable the railroads to transport the same volume of freight with one-third less rolling stock than at present.

The total number of enclosed cars in use on January 1, according to the figures of the American Railway Association, was 2,000,000. If each of these cars was replaced with the container type of car, and if only four instead of eight trucks were employed for loading and unloading, it would necessitate the production of 8,000,000 motor trucks — quite an order for the American motor truck manufacturers.

The experiments of the New York Central Railroad are being closely watched by all of the transportation interests of the country, and their ultimate success will mean an immediate combination of railway and motor for the country's general transportation requirements.

THE WORLD'S GREATEST RADIO STATION.

President Harding, a few weeks ago, opened the "central station" of the Radio Corporation of America, said by leading engineers to be the most powerful ever constructed. Seated at his desk in the White House, in Washington, the President pressed a key and an automatic sending device began to send out an official message to receiving stations in twenty-nine different countries. Within eleven minutes replies were received from England, France, Switzerland, Italy and Norway, and inside of seventeen minutes twelve of the countries had been heard from in response.

The sending station is on the coast of the Atlantic Ocean, at Port Jefferson, New York state, about seventy miles from New York City. The site covers ten square miles, and when completed the station will resemble

a huge wheel with twelve spokes, the power house and sending station forming the hub of the wheel, while each set of antennae, mounted upon six immense towers, will form a spoke. At present only two sets of towers have been erected, each 460 feet high, while the cross arms are 150 feet long.

A sending speed of 100 words a minute is possible with each unit, so that when the entire installation is completed twelve different messages may be sent simultaneously, each at the rate of 100 words a minute. The transmitting range of the station is virtually world-wide, the preliminary tests having been heard in all parts of Europe and in Australia, South America and Japan. The station is to be operated by remote control from the New York City office of the corporation, over wire lines built by the forces of the New York Telephone Co.

The receiving station is at Riverhead, Long Island, sixteen miles from New York City. No operators are stationed there, either, the signals being automatically transferred to wire lines and received at the New York office. The action is simultaneous from the time the signals are transmitted abroad, picked up by the aerial, to the moment of actual transcribing by the receiving operators in New York at the central office there.

With the opening of this station America becomes the centre of world radio communication. Poland has contracted with the United States for a station there, and an agreement has been made with French, British and German representatives that the station to be built in Chile, South America, shall be jointly owned and operated. Another station is to be built in Brazil, and still more will be built in more distant parts of South America as the need arises. Distant points in Europe are also to have stations, according to present plans. Of all these Radio Central, in the United States, will be the centre.

Great credit is said to be due to the engineers and executives of the General Electric Company, the Westinghouse Electric & Manufacturing Co., the Western Electric Company and the United Fruit Company, for their aid in working out the commercial, financial and technical problems connected with the immense enterprise. These companies have all agreed to turn over to the Radio Corporation of America all inventions dealing with radio for a period of twenty years so that the progress of American-controlled radio would not be hindered by any patent litigation whatever. It will be recognised that the commercial

and industrial possibilities of the new departure are almost unlimited.

TELEPHONING FROM A MOVING TROLLEY CAR.

The trolley wire of an electric railway system carries a current powerful enough to move its cars, with all their passengers. It might be thought impracticable to call upon it to transmit in addition a telephone current, with its minute variations of intensity, reproducing human speech at a distant point, but this is exactly what takes place in what is known as the "carrier current" system of communication, of which a number of successful demonstrations have just been given in the middle western states. These tests were the culmination of development work extending over ten years, followed by the practical tests on the Chicago, Milwaukee and St. Paul Railroad, where communication was effected up to sixty miles.

The system makes use of a second current superimposed on the same trolley wire which supplies current to operate the electric car. This carrier current, which is generated at higher frequency than the power supply, serves to transmit messages along the wire, from which it is picked up at any convenient point and made to energize a telephone instrument. The chief demonstration took place on the Chicago and Northwestern Railroad, five miles from the city of Chicago, and was arranged by the railway department of the General Electric Company, which is much interested in the development of the new system.

From the moving electric car the railway men were enabled to talk successfully and easily with a sub-station on the line a number of miles distant, and also to listen to conversation from the operator in the station.

The second feature of the demonstration was listening to the conversation of the sub-station attendant at a waiting room over three miles distant from the sub-station, the messages being transmitted over the trolley wire and amplified in the waiting room by a loud-speaking telephone instrument.

The demonstration was designed, primarily, to show the application of the system to communication on electric railways, especially as regards expediting train operation. The apparatus used for carrier current is small and simple of operation. It consists essentially of vacuum tubes used as oscillators, rectifiers and detectors, making up a telephone equipment equalling in sensitiveness and simplicity the most modern apparatus.

So successful were experiments mentioned that telephone and traction engineers believe they will lead to the early perfection of a practical telephone system for all electric railways. A prominent engineer, speaking of the accomplishment, makes the statement that "these tests seem to indicate the perfection of a real telephone system, utilizing the power wires as a conductor, which will provide for the usual call and telephone communication between different cars and trains. The system is equally applicable to communication between the train despatcher and the trains in operation under his direction. This is an important development, which will doubtless contribute materially to the facility and safety of railway operation."

WHAT TO DO IN MOTOR ACCIDENTS.

It is a great help to the motorist who may be involved in an accident to know just what to do. Those who are most expert in handling an automobile, and use the utmost care in driving, may at some time have that misfortune. Even the most efficient man at the wheel of a car may not be able to avoid a crash when other drivers on the same road are reckless. Certain knowledge of how to act in case of a wreck having been assimilated may mean the saving of lives in a time of emergency.

In case of accident, the motorist should see that first aid to the injured is administered to all who need it. Every driver should have some knowledge of first aid methods, and carry as a part of his car's equipment a small case of first aid materials. Those who seem to be injured most should, of course, receive first attention. If there are serious injuries an ambulance or the nearest help should be called or another car secured to hurry the injured one to the nearest hospital or physician's office.

If any bones are broken, relieve at once the tension any clothing may be causing and get the patient to lie down and remain as quiet as possible. See that some one watches such a person closely, as he or she is apt to faint. Should there be any bad cuts indicating that arteries or large veins have been severed, and that life blood is rapidly flowing away, it is important to quickly tie something around the arm, limb or body which will stop the flow at least to some extent. A handkerchief will serve the purpose, as several of them tied together. They should be tied between the heart and the wound.

Undertake to get the names and addresses of all who actually saw the accident. This

may be difficult, as many persons are opposed to going on the witness stand to testify regarding an accident, and will leave a crowd as soon as any one starts to take names. If possible, call for an officer or policeman. If the accident takes place in the city it may attract the attention of a police officer. Request him to hold all witnesses until the names and addresses of the onlookers have been secured.

Make a sketch of the exact position of the cars with measurements from the cars to the curb or edge of the road, and show the directions in which both cars were moving. If a camera can be secured get pictures of the wreckage from different points of view. They will be the best of evidence. If the wheels of a car were locked by the brakes there will probably be a mark on the road or pavement. Indicate this carefully on the sketch.

Clear the road so that traffic, if it be restricted or blocked, can be resumed. This may mean moving one or more cars, and therefore destroying of evidence. If a garage can be got in touch with a wrecking car may have to be secured to restore the traffic. Avoid letting members of the crowd which may have collected touch or change the position of anything until all necessary data shall have been secured. Be sure to include in the memoranda taken the names and numbers of all the cars involved, together with the license numbers and the names and addresses of owners, drivers and occupants.

If a car that has become involved in an accident is covered by insurance, get in touch at once with the insurance agent who has authority to settle the claim.

While Mr. Wood, Mr. Ormsby-Gore and Mr. Wiseman were in Barbados, a meeting of parties interested in the manufacture and export of sugar was held, at which the outlook for that commodity was discussed. The meeting was unanimous in the belief that unless Government assistance was forthcoming, in the shape of a guarantee being given to banks doing business in the island to augment the funds of the State Bank for agricultural purposes, a serious deadlock would be the result.

* * *

A rich seam of fire clay believed to be 30 ft. in depth has been discovered at Enfield, N.S.W. in the vicinity of an already worked bed of brick earth. The neighbouring kilns are preparing to turn out fire bricks on an extensive scale to fill the Australian demand, which at present is being met by imported bricks.

Canadian Trade and Finance.

Montreal, 1st March, 1922.—The much discussed question of German reparations is still to the fore in Europe, and will continue to be so, until some more or less satisfactory arrangement is made. The making of any entirely satisfactory arrangement seems to be out of the question. Current proposals in regard to reparations distinguish between payment in cash and payment in commodities, but this is a distinction without any real difference. Payment in commodities involves the handing over to the allied governments of a certain quantity of goods. These goods, the governments concerned would have to sell at home and abroad. Coming from Germany, they would consist mainly of manufactures. And as, in many cases, there is a surplus rather than a shortage of manufactured goods in the markets of the world (the manufacturing industries of North America bear witness to this fact) the sale of government stocks would tend further to disorganize industry and to increase unemployment. If cash payments are to be made, Germany has to sell a great mass of goods abroad, in order to secure the necessary funds. In the one case, German firms, in the other case, the allied governments would be the sellers; and that is practically the only difference between the two methods.

The payment of a very large sum in one of these two ways is not an impossible task, but it involves German labour working long hours for small wages, so that low cost German goods may be sold freely in all the markets of the world. It also involves intense competition for the manufacturing industries of other countries.

Another proposal is one for making Germany discharge a portion of her debt by doing construction work in the devastated areas of France. This, of course, would take away business otherwise destined for French construction firms, but it might entail less in the way of disorganization. In any event, it would be only a partial solution of the whole problem. What the full solution will be, remains to be seen. As the matter stands, the allies are almost unanimous in their desire to secure payment, but, fearing the disorganization of their industries, they are unwilling to encourage the importation of the quantity of goods by which alone payment can be made.

THE ALLIED DEBTS.

There are many points of similarity between the reparations problem and the problem of

the allied countries' debts to each other. The French and Italian Governments owe large sums to the United States. The outstanding claims of the latter country for money advanced to the allies during the war, now total over ten Billion Dollars. Various proposals have been made in regard to the cancellation of this debt, but so far, this is a step which the United States has been unwilling to take. Looking at the matter from a theoretical standpoint, there is no good reason why they should. England, France and Italy obtained the money as a loan, and they gave their definite promise to repay. Given time, they are capable of doing so, and they are not asking for charity. But a few people in the United States are beginning to see that there is another side to the matter, and they are asking themselves whether after all their own interests do not counsel the cancellation of all, or of part of this ten billion dollar obligation. If matters remain in *status-quo*, it means that the European countries concerned have to attain a surplus of exports over imports, amounting to at least the interest on the sum they owe — in other words an annual export surplus valued at about \$450,000,000. What country would they look to as the main market for their enlarged exports; the wealthy United States. And what country would suffer most from the economy in purchases which they would be forced to exercise; the United States again. All these vast payments entail disorganization in world trade, which is bound to deal a blow to the prosperity of the United States, a country whose productive capacity was greatly increased during the war, and whose business depends to an ever increasing extent on the business of foreign countries. The problem is theirs to solve. If they wish their debts to be paid in full, the allied countries undoubtedly will pay them. But they must realize that, in the last analysis, goods are the only means of liquidating the sums due, and their desire for payment logically must be accompanied by willingness to take the goods. As we shall show in the following paragraph, no such willingness has up to now been displayed.

TARIFF BARRIERS.

At a time when the reconstruction of international trade, and the liquidation of war debts, call for the utmost freedom in the interchange of goods between the countries of the world, the erection of tariff walls to hamper

such free interchange has never been more to the fore. And taking a leading part in the movement, is the great creditor nation of the world, the United States. The Fordney Emergency Tariff, which deals mainly with agricultural commodities, does not greatly affect Europe, but it has changed the course of exports from Canada and other countries, sending them to Europe direct, rather than through the United States. This will tend to reduce Canada's purchases in the United States. If the new regulations for assessing the values of imports—the so-called American Valuation Plan—is ever put into effect, Europe will

be very directly hit. Nor has the United States been alone in this raising of tariff barriers. The new countries of Central Europe have specialized in devising new duties and new regulations to hamper trade between one another, and other European countries. Even those which have reparation payments due them, have not been behindhand, in trying to keep out the goods in which these payments must be made. There is an element of the ridiculous in the whole situation. It is to be hoped that recognition of the facts, as they stand, will be one of the features of any economic conference in Europe.

Cotton Prospects in Ceylon.

A correspondent writes to the "*Times Trade Supplement*":—Some time ago Mr. B. Horseburgh, then Government Agent of the Northern Province, drew the attention of the Director of Agriculture to the existence in the Mannar District of what appeared to be "black cotton soil." The director sent samples of the soil to the Government Agricultural Chemist for analysis and report, and ordered the divisional agricultural officer to report upon cotton-growing prospects in the area.

The reports of the two officers show that the "black cotton soil," which covers some 16 square miles, is equal to the cotton soil of the Madras Presidency, and the lesser cotton soils of America, that the place is free from the malarial fever during greater part of the year, that the average annual rainfall of about 40 inches, chiefly registered between October and December, is favourable for cotton growing, that motor tractors might be employed to trim the land, that cattle might be raised with advantage to work the land for crops in general and that the water supply is satisfactory, there being five small tanks, two of which are now used for paddy cultivation. Against these advantages have to be set the very unsatisfactory road conditions to Mankulam, the nearest railway station, which is some $14\frac{1}{2}$ miles away. This might, however, be remedied by laying trolley or aerial-tramway lines to transport produce. The local labour supply is meagre, so that labour would have to be introduced, and the possibilities of damage to crops by pests and by wild animals, must be taken into account.

It is estimated that working 10,000 acres on a two years' rotation basis, or laying out half the whole area under cotton at a time,

1,500,000 lbs. of cotton could be obtained from each crop.

The divisional agricultural officer of the Southern Division planted during the Christmas rainy period 10 acres at Kiula, and 50 acres at Ambalantota, with Cambodian, Egyptian, American, Upland, Sea Island, and Indian cotton. Upon the result of these experiments will depend the extension of the cotton-growing area in the Tangalla and Hambantota districts.

Some Indian and Cambodian cotton seed was distributed among villagers in the Southern Agricultural Division some time ago. The Ceylon Government has in hand Rs. 5,000 to purchase the resulting crop of seed cotton at a fixed price of 20c. per lb.

The Brazilian Government announces that tenders for the electrification of the Central of Brazil State Railway will be received in London up to March 15 as well as locally. This important work involves the electrification of 53 miles of that section of the railway carrying the most traffic, as well as the construction and distribution of the signal systems for four sub-stations and the furnishing of 22 locomotives and 150 motor carriages.

From April 14 to May 16 next an Agricultural Fair and Exhibition will be held in Algiers. It will be divided into three principal sections—one devoted to Algerian products, such as wines, cereals, minerals, carpets and alimentary pastes; the second will include agricultural implements and tools, motors, chemical products, etc.; and the third will be devoted to motor vehicles. Sections two and three are open to foreign exhibitors.



Views and Comments.

BY "ECONOMICUS".



The Hon'ble Finance Minister, Government of India, is to be congratulated, if anything, for his boldness, for it was a wise and sound policy he laid down, in introducing the Budget for 1922-23, that the expenditure must be equal to the income and that the State, any more than individuals, could not afford to shine on borrowed feathers. I.O.U.'s in paper currency and earmarking of loans for current expenditure have landed the ship of State in considerable difficulties and it required more than superhuman strength, at the present juncture of complete dislocation of our trade and finances, for the Government to cry halt and ask the people to bear the burden now and here instead of putting off the evil day.

Two ways are open to the Government to attain the ideal :—(1) To cut down all unnecessary expenditure ; and (2) to increase the revenue by fresh taxation. It is true the pruning knife is being applied to several items of expenditure, but the military, the pet child of Indian finance, is untouched, while some of the new proposals of taxation, whatever grist they may bring to the mill of administrative machinery, will further tend to increase the poverty of the poor and paralyse some industries. There is at least a possibility that the enhanced Postal and Railway rates and the duties on matches may not bring in the expected revenue, since their demand is more or less of an elastic nature.

In reply to the same debate, Mr. Chatterjee, Industries Secretary, said :— "In dealing with the Stores Purchase Committee's Report, the Government of India issued a letter asking for the opinion of local Governments and the general public as far back as a year ago, but even till now (March 2, 22) they had not received the opinions asked for ; it was therefore impossible for the Government of India to take action without receiving public opinions." We are sorry to remark that in matters in which the public are quite in earnest and demand immediate action the Government machine moves very slow, if it moves at all, but in all matters concerning its upkeep and repair it acts with lightning rapidity.

Over £120,000 is to be spent on reclaiming 12,000 acres by means of a drainage canal on the banks of the Rhone in the Canton of Valais.

H. E. the Commander-in-Chief's views in support of the huge military expenditure have at least the merit of candour. Said he :— "When the internal situation is quiet, when united India can show her loyalty and devotion to the British Empire beyond question and when those who ought to know better cease to stir up racial animosities, I shall be prepared to consider reduction in the army, but not before." Economics and politics are closely related. One may venture to prophesy that there is no immediate prospect of any relief on this score and between the disaffection, real or imaginary, on the part of the people, and fears, real or imaginary, on the part of the State, the vicious circle will unfortunately continue entailing immense sufferings for the poor.

Sir Vithaldas Thackersey moved in the Imperial Legislative Assembly to appoint a Committee to encourage the establishment of necessary industries so that as large an amount as possible of the Rs 150 crores proposed to be set aside for the rehabilitation of railway during the next five years be spent in India. Mr. Innes, Government Commerce Member, "sympathized" as usual with the principle, even promised to do all he can to carry it out, and ultimately gave his consent to appoint a Committee, but held that "the Stores Department must conduct its business in accordance with business principles ; otherwise there might be an appalling waste of the taxpayers' money." The Government's meticulous care for the taxpayers' money is no new profession, but one may fairly ask whether it keeps it in mind in making purchases in England when foreign tenders are sometimes quoted at less price. If the shop-keeper's principle of buying in the cheapest market is for the once laid aside, what is the objection to provide work and purchasing power for the people of this country who are the taxpayers as well, even at a somewhat higher cost than for foreign goods ?

Economic Notes.

INDUSTRIAL, AGRICULTURAL, EDUCATIONAL AND GENERAL.

The Kavalir factory was founded nearly a hundred years ago by an ordinary glass worker, who however soon became famous for his chemical glass products and before his death he was elected an honorary member of many academies, etc. His glass was bought by Pasteur as well as by the great German chemist, and it was his factory which gave the first impetus to the great German glass industry at Jena. The Kavalir chemical glass is famous all over the world, and the new invention of Kavalir's successor will considerably enhance its wide reputation.

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A good deal has been said in these columns as to the suitability of concrete roads for the traffic usually met with in this country, and for some time our remarks, arguments, and examples of what was being done in other countries fell on rather deaf ears. It is interesting to note, however, that the last year or so has seen a considerable change of opinion in road making circles in England, and within the last twelve months one London borough, where no fewer than 25 roads have been remade in concrete, has put in hand the reconstruction of 15 more roads in reinforced concrete. Further, we understand that the New North circular road, starting at Ealing and which is to pass through Willesden and Edmonton to the East-end and thence on to South-end is to be a typical concrete road. The plan is for this road to include two 24 feet road pavements, a central portion of 20 feet wide for trams and fast vehicular traffic and two 16 ft. pathways for pedestrians. A part of this road is already under construction by the Middlesex County Council. This work has not been undertaken without due consideration. Roads constructed in the manner we have so long advocated have been under extensive trial in different parts, and complete reports as to their suitability, durability and low cost of maintenance have been collected and considered before this new and extensive scheme was finally put in hand. There is now no doubt that this method of road making will rapidly supersede other and less up to date forms of constructions.

The rubber tree has many enemies in the form of beetles, which constantly attack it by boring holes in its bark. The tree defends itself by throwing out a fluid which quickly fills up this hole and hardens. Now, since the rubber trees sway back and forth in the wind, there is danger that this stopper will be wrenched loose, thus preventing the wound from healing. This fluid is therefore of such a consistency that when hardened it is elastic and the movement of the tree does not open the wound. This stopper is made of rubber. By tapping the tree and drawing off this fluid we have gained this invaluable product and put it to thousands of uses.

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Dr. Horak, manager of the well-known and old-established Kavalir glass factory in Sazava, Bohemia, has succeeded, after thirteen years of research, in producing unbreakable glass. The first tests of the new product were made at the recent glass exhibition at Hradec Kralove, where the inventor demonstrated before an interested public that his glass plates and vessels remain intact when thrown to the ground from a height of over twelve feet. He roasted meat on a thin glass plate over an open fire at a temperature of 400 degrees centigrade, he melted tin in a glass pot and drove nails into a hard piece of wood with a piece of his new glass. A tiny glass tumbler scarcely a millimeter thick was heated in a stove to such a degree that wood placed into it was immediately charred to ashes. The glass, however, not only stood the heat, but even remained unbroken when plunged into cold water while still in this overheated state. The manufacture of this glass which is known as Silex-glass required special mechanical treatment and new machinery. The carborundum stones used for cutting ordinary glass are of no use in the case of Silex-glass. Even a diamond sometimes fails to cut it. American, Swedish and Czech capitalists have already offered Dr. Horak large sums of money for the utilization of his invention, although it is not yet known what particular goods he first intends to produce wholesale.

The Department of Commerce and Industry of the Government of Palestine have forwarded a report on conditions in that country, in which it is stated that local labour, recently introduced, has proved peculiarly adaptable to the work provided in a cigarette factory at Jaffa, which the Director of the Department recently visited. At present no Palestine leaf is used in the factory, as none suitable has yet been offered, but the Department of Commerce has stated that, in order to assist Palestine growers, packets of even 50 kilogs. will be accepted.

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While the report of the Geddes Committee has still to appear a contemporary has published what purports to be an extract from the Committee's findings with regard to the Department of Overseas Trade, wrote a London correspondent on the eve of the appearance of that Report. From this it would appear that a 75 per cent reduction of the staff is contemplated, and it is suggested that the remainder should go over to the Board of Trade, and, to quote the extract "Devote itself to giving out general information, it being expressly forbidden to answer specific inquiries about trade." It is difficult to believe that even in these times anything of the kind should be contemplated. Half the problems with which we are faced to-day are in connection with the development of trade, and it would surely be a truer economy in the circumstances to enlarge the scope of the Department at the expense of some of the Departments concerned with home affairs which in present circumstances can only be regarded as luxuries. When it is essential to effect such enormous economies in administration there must be a very real danger that the Department will suffer from the "pruning knife", but one can only hope that the Government will think twice before interfering with an organization which has rendered very real services to the business community and which will be even more essential in the difficult months that lie before us. Before the war traders as a whole were inclined to deride official efforts to help them, but that attitude has absolutely changed as the result of the work that has been done in the last few years. In this connection a notable tribute to the Department was paid at the recent meeting of Lloyd's Bank by Sir R. Vassar Smith, who pointed out that the Department has assisted trade by obtaining much valuable information which had been of great help to manufacturers and merchants.

A regular air service has been opened across the River Plate between Buenos Aires and Montevideo.

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The Royal Society for the Encouragement of Arts, Manufactures and Commerce (better known as the Royal Society of Arts) is endeavouring to raise by subscriptions the sum of £50,000 for the purchase and renovation of its historic premises, built for and leased to the Society in 1775, by the famous eighteenth century architects, the Brothers Adam. In a special appeal to the considerable number of Fellows residing in India attention is directed to the important work performed for India by the Society. This appeal is signed on behalf of the Committee of the Indian Section of the Society by Sir Charles C. McLeod, Sir Charles H. Armstrong, and Sir M. M. Bhownaggee. The contributions already received from India include £500 from Mr. T. N. Muthiah Chetty of Ramachandrapuram, Pudukkotta State, and £100 from Mr. N. N. Wadia, C.I.E., of Bombay.

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Another controversy of the day, which seems to be evoking more interest than that of the creeds, relates to the feeding of school-boys. Indignant parents write to the papers to say that their boys are not being properly fed at school, and that as they pay £200 a year for keeping them there eight months in the year something better than bread and margarine should be doled out for supper; harrassed housemasters reply that, so far from profiteering by starving young England, it is impossible to put money by for one's old age, so capacious is the interior of youth, and so utterly does boy-nature abhor a vacuum, particularly in its inside. Doctors and physiologists have joined in with learned talk about calories and vitamins; but meanwhile it is announced that yet another public school is to be founded, this time out of a disused ducal mansion. My own impression is that the food at public schools is reasonably good; it is what some sardonic person has called the system of education that is hopelessly bad. The schoolmaster still thinks in Latin, and sighs for the restoration of Greek; he continues to look on those youthful languages, English and French, as essentially barbaric tongues; and like the classical don the world over, he persuades himself that the niceties of grammar are "the humanities". The mentality of a pedagogue must be a very curious study, but it is incomprehensible to the ordinary person.

The Report of His Majesty's Chief Inspector of Mines for 1920 states that a new type of electric safety lamp in two parts, for use in mines, has now been placed on the market. The lamp globe is worn on the cap and the battery carried on the waistbelt, thus leaving the hands and arms of the worker free. By the use of such lamps the number of accidents due to the ignition of small quantities of inflammable gas could be reduced to a minimum.

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The Report on the Administration of Mysore for the year 1920-21 says that the erection of the wood distillation and blast furnace plant at Bhadravati has been almost completed; and the plant is expected to be ready for operation by January, 1922. Raw materials required for starting the works are being collected and the construction of tramway lines is progressing. It is expected that the manufacture of iron will begin from July, 1922. The total estimate for the whole scheme is likely to be Rs. 210 lakhs, the amount spent up to the end of June, 1921, being Rs. 110 lakhs.

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Canadian pulp and paper exports for October were valued at 8,954,225 dols., a decline of 9,751,780 dols. as compared with October, 1920, and of 502,802 dols. as compared with the preceding month of September. Exports of newsprint during October, totalled 1,314,157 cwt. against 1,288,089 cwt. in October, 1920, an increase of 26,068 cwt. (1,303 tons), and exceeded the figures of September, 1921, by 190,021 cwt. (6,501 tons). They lost in value 1,404,690 dols., as compared with a year previous, but gained 7,236 dols., as compared with September, 1921. The destinations of paper and pulp exports were as follows:—Paper:—United Kingdom 96,839 dols.; United States 5,233,258 dols.; other countries, 536,622 dols. Pulp:—United Kingdom 660,758 dols.; United States 2,164,008 dols.; other countries 262,740 dols. The Canadian Export Paper Company, Montreal, has officially announced a price of 75 dols. per ton for newsprint, sold under contract for the first quarter of 1922, a reduction of 5 dols. a ton from the current rate. According to a report issued by the Canadian Pulp and Paper Manufacturers' Association, Scandinavian paper manufacturers who recently visited Canada stated that American and Canadian prices announced for next year are on a scale such as it will be very difficult for Scandinavian producers to undersell and make any profit.

It appears, from news received in Reval, that the Railway engines ordered by the Soviet from Germany are too heavy for the Russian Railways and have caused the collapse of some of the railway bridges.

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A Paris message states that the first stage of the extended air route in North-West Africa from Casablanca to Oran, may be opened in June; it is hoped ultimately to establish connection with the seaplane service from Antibes to Tunis *via* Corsica.

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It will be remembered, we read in a Calcutta contemporary, that the British Air Ministry sent to the Bose Institute the latest type of the wireless telephone apparatus for scientific researches. Loud reproduction of the human voice has, for some time past, been exhibited at the Institute. The invited guests at the Bose Institute had the unique opportunity of thus seeing the earliest wireless apparatus, exhibited by Professor Bose at the Presidency College and at the Town Hall so far back as 1894, and the latest advance in wireless communication. Professor Bose has later been able to show that ordinary trees responded to wireless signals, which were automatically recorded by the tree.

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"The Educator Journal," of Indianapolis, is responsible for the following:—Of the total school enrolment of the United States 91.41 per cent is in elementary schools, 6.82 per cent in high schools, and 1.77 per cent in higher institutions. Of the 10,000 persons in Who's Who in America, 39 had no schooling, 1,008 had common school training, 1,545 attending high school, and more than 6,000 were college graduates, or attended college. Less than one per cent of the American men, past and present, are college graduates. Yet 55 per cent of the Presidents of the United States came out of that number. 36 per cent of the members of Congress, 47 per cent of the Speakers of the House, 54 per cent of the Vice-Presidents, 62 per cent of the Secretaries of State, 69 per cent of the Supreme Court judges. Out of 5,000,000 American men with no schooling, 31 have attained distinction according to Who's Who. Out of 33,000,000 with elementary school training, 808 have attained distinction. Out of 2,000,000 with high school training 1,245 have attained distinction. But with only 1,000,000 with a college education, 6,000 have attained distinction.

There are 15,000,000 acres of first class pine timber in the state of Durango, says *Drug and Chemical Markets* of New York more than half of which is owned by the Federal Government, and is suitable for the production of turpentine and rosin. An American company has been the pioneer in the turpentine industry. It has been the first modern distillation plant. Very good grades of turpentine and rosin are produced. The trees in this district will produce for three to four years, and each tree yields more than a quart of pure white turpentine during the season, and six pounds of rosin, equal to the quality of rosin produced in other parts of the world.

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The committee appointed by the United Provinces Government to consider the question of establishing an industrial bank in the United Provinces are of opinion that no details were before them to warrant the inauguration of an industrial bank, and after full consideration of the various methods of meeting the needs of small industrialists, it was decided that in the initial stage government would have to shoulder the question of finance. It was thought the best thing that could be done was to set up a board of industrial bank commissioners who would consider and decide upon such application. The committee felt the above proposal was the best suited to meet the immediate needs of the situation and the experience gained would eventually show whether an industrial bank was required.

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M. Louis Breguet, the French aeroplane builder, whose "expresses" fly daily on the Paris-London airway, is designing for immediate construction, to the order of a powerful air group with interests in America and France, a vast machine of metal, which is to have 24 engines, developing a total of 12,000 h.p. Spoken of by M. Breguet as "the ocean air express," this monster is to have hollow wings so large that not only will they contain the many motors and tanks, but there will be ample space within them for roomy passenger cabins, the depth of the wings at their thickest points being such that a man, standing up within them, will find he has ample space above his head. Though it will weigh as much as 165 tons—being the heaviest heavier-than-air machine in the world—it will travel at a maximum speed of three miles a minute, and will be scheduled to cross the Atlantic, between Paris and New York, in about 24 hours' continuous flying.

Motor-Cars made of Cotton! Such is the latest invention of Mr. Henry Ford, the American millionaire. This new material consists mainly of highly-pressed cotton, which when complete, will replace the steel at present used in the building of car bodies. Mr. Ford calls his new invention "cottonoid," and believes that before very long it will be used for other purposes than building motor-cars. Its extremely light and durable nature makes it very suitable for many uses, and its inventor thinks that it will prove a boon for house building to replace bricks and stone. Trains, he believes could be built of the same substance, thus doing away with a good deal of unnecessary weight. For some time the stalk of the cotton plant has been successfully utilized in the manufacture of paper.

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We learn that at the instance of the Director of Development, the Government of Bombay intend to appoint a committee of engineers, representing local bodies and departments of government, to investigate the utility of re-inforced concrete for structures in Bombay city. The committee will examine such structures as have been in existence for more than eight years and report on their condition as well as the probable reasons for the corrosion of the steel in any such structures which may be found to be defective. The investigation should serve a most useful purpose not only in respect of the future development of the city but also in respect of the safety of existing buildings. It will be remembered that last year the front portion of a re-inforced concrete building which was being erected in Goa Street, Bombay, collapsed. A committee consisting of engineers of the municipality, development department, improvement trust and port trust inspected the building and wrote a report on the causes of the failure, but their finding was not very conclusive. The committee remarked that it was difficult to state what was the exact cause of failure which they attributed to one or other or a combination of causes which they detailed. Among these causes were the fact that steel bars of certain beams which failed did not appear to have been carried sufficiently far over their supports, horizontal holes made by use of chisel and hammer had been cut in the most vital parts of certain beams, while the concrete was not in all places composed of the requisite materials. The steel used proved, however, to have been of good quality.

A new device of an electrical character has been produced for making hay when the sun does not shine, or, in the words of the inventor, for preserving new mown grass without first drying it in the sun. The freshly cut grass is stored on metal plates in silos each of about 400 cubic feet capacity. The top of the silo is closed with another metal sheet, and this and the bottom plate are connected in an electric circuit so that an alternating current at a pressure of anything from 200 to 500 volts is passed through the grass, which is, of course, a fairly good conductor. It is said that the effect of this current flow is to destroy all bacterial life that would tend to cause the damp grass to decay. It can consequently be retained in this fresh and natural state for an indefinite time and I understand that from 130 to 200 kilowatt-hours will treat five tons of grass.

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The following appears in the "Times":—"It was announced in Parliament . . . that the Government of India has decided, in view of the present financial stringency, not to take part in the scheme for the promotion of an Imperial airship service. Thus, on grounds of economy, India comes into line with New Zealand and South Africa. With the co-operation of India a restricted airship service would still have been a possibility; without it, the modified proposals on which the promoters of the scheme were prepared to work, fall to the ground. There remain rather more than three months before the final disposal of the airships will take place. During that time Mr. Ashbolt, the Agent-General for Tasmania, intends to fight hard for the adoption of his proposal that an arrangement be made under the Reparations Agreement with Germany, for the supply of material from that country in reduction of the sum to Great Britain. Disappointing as the result of the negotiations with the various Dominion Governments is, it cannot be felt the final word has been said with regard to the general scheme. . . . We shall not be able to afford to do without airships. When Spanish South American Zeppelins are in commission, competition will doubtless give a strong and an irresistible impetus, as it has in other directions in the past."

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The Hugo Stinnes interests have opened their Gulf of Mexico-Hamburg service with the sailing from New Orleans of the 7,000-ton steamship Otto Hugo Stinnes, with a full cargo of foodstuffs and general merchandise.

The "Bengal Agricultural Journal" comments briefly on the Sugar Committee's Report. It says:—The Report of the Indian Sugar Committee, has now been published. Its recommendations so far as they affect Bengal are somewhat disappointing. Briefly stated the Committee does not consider that there is much prospect of extension and this fact taken in consideration with the intrinsic value of the industry, does not in its opinion justify either a special research station or a whole-time sugarcane officer. It is further of opinion that attempts at improving the cultivation should be confined to regions above flood level and suggests that the interesting classification of the varieties nowhere more mixed than in Bengal, should be resumed and brought to a conclusion. The small holdings of Bengal and the scattered nature of the cane cultivation are not conditions which favour the establishment of central sugar factories. The area under cane in Bengal is about 223,000 acres.

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Cocoanut shells are found in abundance in the copra-producing areas of India and Ceylon. A large quantity of this is wasted. Four tons of shell produce a ton of charcoal. It is true that the export of the cocoanut shell charcoal is increasing. But some portion of the shells is used for fuel locally. A small percentage is used for carving works, such as lamps, cups and saucers, spoons, etc. Most of the rubber estates use the holeless half for latex collection. Experiments recently made have found that the shell can yield a valuable tar, non-corrosive antiseptic, and an excellent vegetable substitute for acetic acid-creosote. It is said that rubber regulated with this creosote will require no smoking—it need only be dried in the open air, and will yield a pure white material, which stands against climatic changes much better than material treated with acetic acid. A heating chamber, a condenser or cooler, and a distillery, the necessary machinery, which could be worked by five coolies are estimated to cost about Rs. 12,000. The shell packed inside the heating chamber is heated to a very high temperature from outside and the creosote thus obtained is then dealt with within two other machines. A ton of shell will yield about 150 gallons of creosote at a cost of about Rs. 2 per gallon, a very great saving over acetic acid. The distilling over, the shell will serve as an inexpensive, non-smoking, first-rate fuel, for running the many gas engines all over the country, which now consume coal and coke.

The following is from the "Jamaica Agricultural Society's Journal":—

A resolution from the Tryall Hill Branch asking that several small pieces of land belonging to one owner, although not adjoining, might be added together and taxed as one holding, as it worked hardship on the owner to pay the minimum tax on each small piece. On referring the matter to the Government, the following is the result: "In reply I am to point out that under section 1 of Laws 5 and 6 of 1908, any number of holdings may be added together up to a value of £20, and form one property for taxation purposes, but that in order to allow of holdings of any greater total value to be added together, an amendment to the Law would have to be made, in which case the amount collectable in each parish would be reduced. I am to say that it would not appear from the wording of the resolution forwarded by you, that the fact of the amalgamation of holdings as set out in the first part of paragraph 2 hereof now exists is known, and I am to inquire whether your Society can suggest an action whereby the Government could correct the mistaken belief so many people hold as to this particular point of Law?" Here is a point for advocates of consolidation of holdings in this country.

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Mr. H. R. Pousette, Director, Commercial Intelligence Service, Ottawa, Canada, who spent the greater part of 1920 in Malaya, Java, India and Ceylon, studying trade and economic conditions, with a view to ascertaining how far the market requirements of those regions might be supplied by Canadian exporters, has just brought out a report under the title "The Indian Empire as a Market for Canadian Products". Included in the Report are chapters on the Peoples and Provinces of India; Agricultural Conditions; Natural Resources and Industries; Statistics of Trade; Agriculture, Livestock, and Dairying; Railways, Ports and Rivers; and Economic and Labour Conditions. An analysis is given of imports into the Indian Empire of commodities in which Canada might offer effective competition. Special chapters are devoted to the Indian Tariff; to Representation; and to Packing and Documentation for India and the Middle East. In the appendices are included, for the information of Canadian importers, details of certain of the industries of India, such as tea, jute, cotton, hides and skins, and steel. A full and carefully prepared Index and a specially prepared map of India complete the work, which extends to

190 pages. The Report is priced at 35 cents and application for copies should be made to the Director, Commercial Intelligence Service, Ottawa.

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It was just about ten years ago that Mrs. Cora Wilson Stewart, at that time a superintendent of schools, established "moonlight schools" in the mountainous regions of Kentucky. This system of schools is now employed in many other states in an effort to combat illiteracy. Moonlight schools came by their name naturally enough in Kentucky, where they were first opened in the light quarters to encourage mountaineers to leave home after supper. The plan proved so successful in enticing people out to school that it soon spread widely. Ten years ago not a single state in the Union had done anything to educate its illiterate men and women, while to-day all save two have definite programmes. As the unlettered come from the great body of workers, night instruction seemed the most practical means. At first Mrs. Stewart and her associates intended to open schools during the light quarters of the moon and to have recess during the dark quarters, but the people were so eager to learn that they polished their lamps and came continuously. Volunteer teachers were easily recruited for the first night schools, and in the decade that has elapsed since their beginning most of the instruction has been freely given. Teachers become so fascinated by the rapidity with which the adults learn that they do not look upon their services as they do day school work. Of course, when a community can afford it, such work is paid for. It was found invariably the case that when moonlight schools were opened in one county and plain "night schools" in another, people travelled much farther to attend the former type, because they liked their name. So the designation became permanent and it has helped tremendously to get communities interested in working for illiterates just to mention it. The schools are usually opened on moonlight nights, even in cities, because it makes for larger registrations.

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In this issue of the Journal, Messrs J. Wickramanayaka & Co., of Kalutara, Ceylon, invite the attention of our readers to their well known jewellery including rings and lockets. Messrs. Wickramanayaka & Co. have an all-India reputation for their wares and we think that those desirous of wares of the kind they deal in cannot do better than apply to them in the matter.

Economic Gleanings

WORLD'S PROGRESS IN FEW WORDS.

The space occupied by the exhibits at Prague is larger than ever before, and covers 350,000 sq. ft. The samples will be sold at the end of the fair.

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Bulgaria's imports from January 1 to October 1 last amounted in value to 1,900,000,000 leva, and her exports during the same period to 1,000,000,000 leva.

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The number of sheep in Morocco is estimated at 5 to 7 millions and the annual production of wool at 10,000 tons. Exports have reached 1,500 tons, value over 7 million francs.

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Commercial activity in French Morocco has shown a great increase since 1920, and agriculture has prospered. Last year there was 15 per cent more land under cultivation than in 1918.

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The Italian Institute for Commercial and Colonial Development has increased the number of its trade correspondents in Ireland and is making a bid for new business by means of direct connections.

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According to a Reuter message from Berlin, German provisional trade statistics for January 1922, give imports amounting in value to 12,800,000,000 marks and exports amounting in value to 14,500,000,000 marks, being in excess of exports over imports of 1,700,000,000 marks.

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According to "Finanstidende", Denmark's imports fell in value from 2,943 million kroner in 1920 to 1,544 million in 1921, and her exports from 1,591 million kroner to 1,383 million. The adverse balance was therefore reduced from 1,352 million kroner in 1920 to 161 million in 1921.

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Our Copenhagen Correspondent says that the Landmandsbank lately attempted to open up connections with the Soviet State Bank. The Bolshevik reply was to the effect that business could not be started before political relations with Denmark were established on a formal basis.

The production of sugar in Italy in 1921 exceeded 200,000 tons, whereas last year it was only a little more than 100,000 tons. Consumption is estimated at 220,000 tons, and as there is a certain amount of sugar on hand Italy's need to import sugar this year will be reduced to a very small amount as compared with the 100,000 tons purchased abroad last year.

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The economic situation of Georgia is rapidly becoming critical, owing to the exhaustion of the food supplies in consequence of the widespread decrease of cultivation. A foreign commercial representative in Tiflis has telegraphed warning merchants to observe the utmost caution in consigning goods to Georgia, in view of the indiscriminate requisitioning by the Soviet authorities.

* * *

Conditions in the sugar-producing centres of British Guiana have been steadily growing worse owing to the low price which the commodity is bringing in overseas markets. In the county of Essequibo only two sugar estates are working, and an extremely difficult situation has been created for cane farmers and labourers alike. Other estates in the colony are faced with the alternative of going out of business.

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A project has been submitted to the Columbian Congress by the Government for the establishment of a bank of issue to be called the Bank of the Republic. Its initial capital would consist of the \$25,000,000 which the United States is paying to Columbia under the Panama settlement. Branches would be formed in the provincial capitals. Freedom from import duties would be granted on supplies of furniture, books, and paper.

* * *

Large deposits of tin have been found in the region of Oulmes, south-east of Rabat. The Moroccan Mines Services expresses its satisfaction with the quality of mineral found. Much is quite near the surface, but before exploitation can be conducted on a large scale it will be necessary to build proper roads.



Topics from Departmental Reports.



Well Irrigation in Bihar.

A resolution published in the *Bihar and Orissa Gazette* says:—

As a result of the enquiry made in pursuance of a request from the Government of India the Local Government decided to organize:

(a) the work of well-boring under an expert staff, and

(b) a systematic subsoil survey.

To give effect to these decisions a scheme was sanctioned in 1907 for the extension of well irrigation in Bihar, which provided for the appointment of one Superintendent and twelve borers for operations in the twelve Bihar districts.

The first duty of the Superintendent was to train his staff of borers, who, after adequate training, were to be equipped each with a set of tools and placed at the disposal of the Collector. It was decided that the work should at first be undertaken by Government as an experimental measure and should be handed over to the District Boards later where the experiment proved successful.

Experience has, however, shown that this arrangement has not been altogether satisfactory. The experimental operations fully demonstrated the utility of a large increase in the number of irrigation wells, but the lack of a wholetime expert to organize and control the boring operations on an extensive scale has held up the natural development. It has become clear that in addition to doing the experimental portion of the work, it is necessary for the special department to carry on the general work of boring wells. The ability of the well-boring department to organize this work has now been secured by the appointment of an Agricultural Engineer and Government are convinced of the advisability of placing the whole work in charge of that officer of the Agricultural Department. The advantages of central control are obvious. It will secure to the borings the benefit of the supervision of experts and will enable the staff to be more continuously and consequently more economically employed. At the same time Government consider that in districts where well-boring is extensive the District Board should bear a share of the cost, and the following arrangement is proposed as the most convenient and equitable.

In districts where applications for well-boring number twelve or more annually, in two consecutive years, the District Board—

(a) should purchase its own plant which will be used only in that district;

(b) should pay for the repair and upkeep of its plant, the repairing work being done by the Agricultural Department. The District Board may either pay the actual cost, or, if they prefer it, a fixed sum every year to cover all charges;

(c) should pay for the wages of the borers and motes. There are two alternatives by which this payment may be made. Either the wages may be paid direct by the Agricultural Engineer and

subsequently recouped from the District Board, or they may be paid by the latter on a certificate from the Agricultural Engineer. In the former case they will be Government servants and in the latter they will be servants of the District Board. This will be entirely a matter for arrangement with the individual District Board.

The cost of supervision and of transport by rail of the plant will be borne by Government and that of transport of the plant from the nearest railway station, of the labour of working it and of the casing pipes left in the bore for protection, will be borne by the person who has applied for the boring of a well.

Indian Iron and Steel Import Trade.

Iron and steel comes third in order of importance in the import trade of India, being exceeded only by cotton textiles and sugar, states H. M. Senior Trade Commissioner in India and Ceylon in his General Review of the Conditions and Prospects of British Trade in India (H. M. Stationery Office, price 5s. net). The imports of iron and steel have shown great expansion in the past two years, although generally they are still, in weight, far below the pre-war figures.

For instance, imports from the United Kingdom in 1919-20 amounted to 269,300 tons, compared with 76,900 tons in 1918-19, and 611,300 tons in 1913-14. Those from Germany totalled 900 tons in 1919-20, against nil in 1918-19 and 200,100 tons in 1913-14. Imports from Belgium totalled 13,200 tons, nil, and 171,000 tons respectively during the same periods, and those from the United States 134,500 tons, 76,100 tons, and 22,000 tons respectively.

From Japan, however, only 2,200 tons were received in 1919-20 as against 15,300 tons in 1918-19 and nil in 1913-14. Other countries sent 6,800 tons in 1919-20, compared with 13,100 tons in the previous year and the very similar quantity of 13,800 tons in 1913-14.

Taken altogether, imports of iron and steel into British India during 1919-20 reached 426,900 tons compared with only 181,400 tons in 1918-19, but were less than half those of 1913-14, which totalled 1,018,200 tons.

The imports of iron and steel for the year 1920-21 were valued at £582,700, of which the United Kingdom's share was £400,000—the shares of the United States and Belgium amounting to £89,400 and £8,300 respectively.

The imports of beams, pillars, girders, and bridge-work from the United Kingdom more than trebled in quantity in 1920-21. In bolts and nuts there was also a three-fold increase from the United Kingdom, whereas American imports were reduced by 600 tons. In hoops and strips United Kingdom

supplies increased by over 2,000 tons, against a decline in the American product of over 7,000 tons. As regards nails, rivets, and washers (other than wire nails) United Kingdom shipments doubled, whereas American supplies decreased by half. Sweden shipped 1,786 tons, Norway 1,581 tons, and it is interesting to note the re-entry of Belgian nails into this market, with 719 tons. In cast pipes and fittings United Kingdom supplies increased by 12,000 tons and American by 2,000 tons. It is most satisfactory to note that in the enormous trade in galvanized sheets and plates, which totalled 66,633 tons, valued at over £3,000,000, the United Kingdom is still supreme, her share of the trade being 59,920 tons, valued at £2,753,000, or 90 per cent, America supplying the remaining 10 per cent. In tinned plates also, the United Kingdom increased her shipments by 15,000 tons and now supplies 90 per cent, whereas the American shipments declined by over 8,000 tons to 4,328 tons, or 8 per cent. Plain steel sheets is the second item in India's imports of steel, accounting for over 98,000 tons, of a value of £3,834,000. Of this trade the United Kingdom supplied 67 per cent., the United States 20 per cent, and Belgium over 7 per cent. Here again there was a most satisfactory increase of nearly 20,000 tons from the United Kingdom. As regards wrought tubes, pipes, and fittings, the position of the United Kingdom *vis à vis* the United States was greatly improved. By dint of an increase in United Kingdom shipments of 9,000 tons and a falling-off in American supplies of 4,000 tons, the relative shares in the trade are now 47 per cent and 50 per cent, as compared with 29 per cent, and 70 per cent. a year ago. America, however, still leads, but it is hoped that by next year the position may be reversed as this and wire nails appear to be the only two items in which American shipments to India are greater than those of the United Kingdom. As regards wire rope, both galvanized and black, it is regretted that detailed figures for 1920-21 are not yet available. In 1919-20, however, United Kingdom shipments of galvanized wire rope were 1,177 tons compared with 145 tons from the United States of America, while in the case of ordinary black wire rope the figures were 1,991 and 77 respectively. Japan also supplied 53 tons. In wire nails United Kingdom shipments advanced from 384 tons to 1,935 tons concurrently with an American decline from 5,963 tons to 2,720 tons. No less than 4,790 tons were derived from other countries not separately classified, but of which it is to be supposed that Belgium supplied the bulk. We now come to the largest and the most valuable import of steel, *viz.*, bars and channels, of which, normally, steel bars account for over 96 per cent. The United Kingdom's share increased from 34 per cent to 52 per cent, while the American declined from 50 per cent to 11 per cent. It should be noted, however, that the share of other countries increased by no less than 43,000 tons, of which imports of Belgian bars at very low prices accounted for the greatest part. The total imports were 148,000 tons, valued at £4,720,000.

Industrial Bank for U. P.

The following appears in the *U. P. Gazette* dated 4th Feb. 1922:—

Proceedings of a meeting of the Committee appointed by Government to consider the question of the establishment of an Industrial Bank in the

United Provinces, held on Thursday, 15th December, 1921, at 10-30 a.m. in the Hall, Upper India Chamber of Commerce, Cawnpore.

PRESENT:

President.—Sir Thomas Smith.

Members.—Mr. E. A. H. Blunt, Secretary to Government, Mr. V. N. Mehta, Director of Industries, Mr. Norman Charles, Manager, National Bank of India, Cawnpore, Khan Bahadur Chaudhari Wajid Husain, Deputy Registrar, Co-operative Societies, Mr. Macpherson, Agent, Imperial Bank of India, Cawnpore.

Mr. Blunt intimated that Mr. Crosthwaite had been detained in Lucknow on Government business, and therefore could not be present. A letter from Mr. Smart, Agent, Allahabad Bank, and a telegram from Mr. Ishwar Dass Varshnei were received regretting their inability to attend.

The following did not attend:—

The Hon'ble Raja Moti Chand of Benares.

Khan Bahadur Hafiz Muhammad Halim, Cawnpore.

Mr. Macpherson, Agent, Imperial Bank of India, on the suggestion of the President, was invited to attend the meeting and assist in the discussion.

2. A preliminary note, dated the 27th November, 1921, prepared by Mr. Crosthwaite was considered and the President submitted to the meeting a statement which he had called for of applications submitted to the Board of Industries for financial assistance. He had asked for this in view of the resolution of the Board of Industries that the need for an Industrial Bank was urgently felt.

These applications amounted to some 16. It was apparent that some of these were not cases calling for Government assistance, and that the money required should have been secured in the open market or from banks. A few of the applications appeared to the Committee as being typical of those that required Government assistance, or assistance from Industrial Banks, being pioneer industries. The list was not exhaustive, and the Registrar, Co-operative Societies, stated his impression that if an Industrial Bank had existed many many applications would have come before it. The Director of Industries also shared this opinion.

3. The Committee felt that no details were before them to warrant the inauguration of an Industrial Bank. Even assuming the need for such a bank, the Committee felt that the terms offered to debenture-holders would be such that a very high rate, probably 12%, would have to be charged to borrowers, as it was unlikely that capital which can earn 6% in Government loans or 6% in United Provinces loans at a discount, both gilt-edged and readily realisable securities, would be attracted to Industrial Bank debentures, which would be more of a lock-up, at anything under 10%.

4. After a full consideration of the various methods of meeting needs of small industrialists, it was decided that in the initial stage the Government would have to shoulder the question of finance, and it was thought that the best thing that could be done was to set up a Board of Industrial Loan Commissioners who would consider and decide upon such applications. The Committee considered such a body of Industrial Loan Commissioners should be composed of—(a) The Director of Industries. (b) A technical expert. (c) A commercial man. (d) Registrar, Co-operative Societies. (e) A representative of the Imperial Bank of India. (f) A representative of Joint Stock Banking. (g) The Financial Secretary

to Government. (h) Power to co-opt three other members.

A strong point in favour of forming a separate Board of Industrial Commissioners was that with financial help at their disposal they would be able to act more expeditiously in the matter of making advances and so avoid the present circuitous procedure of loan applications being laboriously examined by the Director of Industries, the Board of Industries, the Industries Department of Government, and the Finance Committee of the Legislative Council.

The demand for a lump sum would be laid before the Council, and when sanctioned, placed at the disposal of the Commissioners. It was left to the Financial Secretary to work out a scheme whereby the account would be operated on by the Commissioners. The first grant would be purely a provisional one, but it was expected that, as soon as it was generally known that the Loan Commissioners were in a position to extend help to industrialists, a better idea would be gained of the extent of Government aid for succeeding years. It was suggested that 5

lakhs should be put in the budget for the year 1922-23.

5. The Registrar, Co-operative Societies, raised the question of such finance being made available by the Commissioners to finance co-operative banks for non-agricultural purposes. The President took exception to this and said that co-operative banks must stand on their own feet, and that the Industrial Commissioners should only concern themselves with pioneer industries and small industrialists. In this view he was supported by Mr. Blunt, Mr. Macpherson, and Mr. Charles, while the Registrar was supported by the Director of Industries.

6. The Committee unanimously felt that the above proposals were best suited to meet the immediate needs of the situation and the experience gained would eventually show whether an Industrial Bank was required. The result of that experience would be most valuable. It was recognized, however, that it would be impossible, even with great caution and care, to finance such industries without running a certain risk of making losses, and for this Government must be prepared.

Canadian Clay Product Industry.

A young Canadian Industry which is making successful headway and promises to fill an important place among Canadian manufacturers is that of clay and clay products which at the same time, from Canada's wide and valuable deposits of the necessary raw material, offers the opportunity for expansive development and the investment of capital. Not only is the home industry beginning to meet domestic requirements more adequately, but from the excellent standard set by her products is penetrating with much success into the foreign export field.

The total value of the clay and clay products industry in Canada for the year 1920 was \$10,523,271, as compared with \$7,906,366 in 1919, or an increase of roughly 33 per cent. The 1919 production in turn showed an increase of 67 per cent. over the 1918 figures, which is illustrative of how the young industry is growing. In the production of last year, common bricks account for \$4,868,958 of the total revenue; pressed brick \$1,756,760; fire proofing \$591,216; hollow building blocks \$284,163; kaolin \$15,022; terracotta \$120,875; pottery \$207,410; sewerpipe \$1,549,090; drain tile \$619,442; and other products \$517,335.

VALUABLE COMMERCIAL DEPOSITS.

Canada is fortunate enough in the possession of valuable commercial clays, deposits being found all over her wide area. These consist of fire clay, brick and tile clays, and earthenware clays. Fire clay occurs at Shubenacadie and Middle Musquodoboit in Nova Scotia and several localities in Southern Saskatchewan as well as at Clayburn, B.C. It is also known to occur on the Mattagami and Missanabie rivers in Northern Ontario and on the Athabaska river below Fort McMurray. Semi-refractory clays occur in the coal measures at Westville, Nova Scotia, at Flower Cove and Minto, New Brunswick, and at several points in Southern Saskatchewan. Brick and tile clays occur throughout Canada, Ontario being the largest producer with over 50 per cent. of the total Canadian output. Earthenware clays occur in Southern Saskatchewan and Nova Scotia.

IMPORT AND EXPORT.

Canada's import of clay in 1920 totalled \$672,782 in value, China clay accounting for \$242,441; fire clay \$276,139; pipe clay \$2,442; and other clays \$151,760. Her total imports of clay products amounted in value to \$10,781,592, of this amount \$5,067,492 being purchased from the United Kingdom; \$4,805,451 from the United States, and from all other countries \$908,649.

In her export trade Canada sent away to other countries clay and clay products to the extent of \$323,989, of which total \$4,678 went to the United Kingdom; \$240,128 to the United States; and \$79,183 to other countries. Comprised in this export trade were \$99,134 worth of building brick; \$2,516 worth of clays unmanufactured; manufactured clays to the extent of \$157,089; and earthenware and all manufactures of amounting to \$65,250. Exports of foreign produce in clay and clay products amounted to \$2,707.

THE MANUFACTURING CENTRES.

The centres about which the clay manufacturing industry revolves in Canada are St. John, New Brunswick, St. Johns, Quebec, and Medicine Hat, Alberta. These three points are responsible for practically the entire Canadian output of clay products. The prairie province industry, which draws its raw material from deposits just over the border in Saskatchewan, is an aggressive concern which has forged ahead until, according to the claims of its management it accounts for seventy-five per cent. of the Dominion output. Supplying the western provinces it has also successfully penetrated the east and finds a market in Ontario points, giving a good account of itself in competition with the imported article. Its products have also found a market in the United States.

The increase in Canadian clay products production exhibits the movement to meet domestic needs in this regard, but the still enormous importations of these same products point out clearly the wide field still left for expansion in this industry, which has all the aid required in the Dominion's wealth of various clays.

Economic Reviews Reviewed

WITH EXCERPTS AND COMMENTS.

Paper Making as a Home Industry.

Mr. N. C. Basu, writing in the *Bengal Agricultural Journal* for December last, says:—

Paper making was once a thriving Industry in certain parts of Bengal and a large number of families used to earn their livelihood by this means. It was purely a Cottage Industry in which both males and females could take part. Though the paper produced was not of a very high quality as regards finish, yet on account of its lasting nature it was largely used in keeping Zamindary accounts and for writing important documents on. But owing to competition with cheaper and better finished kinds of machine made paper, the industry has dwindled down to insignificance and now only a few families in Bengal can be found who still carry it on. In these cases also paper making is not their main profession, but they do the work in their spare time, their main business being agriculture. In the following places paper making is said to be still carried on.

Villages:—Dainpara, Nagarpara, Duliatur and Arial, in Dacca District.

Village:—Kristapur in Jangipur Sub-Division, Mursidabad District.

Villages:—Deyoolpara, Kalasdanga and Shaha-bazar, in Hoogli District.

The price of paper is going up rapidly and there seems very little chance of much reduction for some considerable time. It seems therefore that the time has now come when the question of reviving the old industry of paper making may be seriously considered. The process as practised in Bengal is quite simple and with a few improvements, there is no reason, why respectable samples of paper should not be prepared. With this idea in mind this short article has been written. To effect the improvement some knowledge of the modern methods of paper making is essential. The method will be described in short.

Raw Material:—There is a large number of materials from which paper can be prepared, amongst which the following are the most common:—Cotton rags, wool, flax, hemp or jute waste, bamboo, several kinds of woods, sawdust, old netting, sea grass and several other grasses.

Of these, the first three are used in making the best kinds of paper. Strong and good quality paper is generally "hand made" as distinguished from machine made.

METHODS OF MAKING PULP AND HAND MADE PAPER.

Different raw materials require different treatment but these are only differences in details, in essential points they are very nearly the same. Paper may be called an "aqueous deposit of vegetable fibre." The vegetable fibre mentioned in the definition consists of pure cellulose. Raw materials are treated by chemical and mechanical means for dissolving out the non-cellulose substances, thus setting free the cellulose.

(a) *Cutting and clearing:*—The raw materials are at first cleaned to get rid of all dirt and then cut into small pieces.

(b) *Boiling:*—These are then subjected to boiling with caustic soda under great pressure. The strength of caustic soda, the pressure applied when boiling as well the time of boiling vary with different substances. After the above operation, the substance is well washed with water to get rid of all the adhering caustic soda.

(c) *Breaking:*—The fibre is then subjected to a breaking process. By this means it is reduced to convenient consistency for the next operation.

(d) *Bleaching:*—A solution of bleaching liquor is then poured on to the substance and kept till the latter attains the proper degree of whiteness. It is then thoroughly washed to get rid of any trace of bleaching solution.

(e) *Beating and Loading:*—This operation is done to tear the fibre to such an extent that it can readily felt together to form paper. The proper length to which the fibre should be reduced is about 1-16th to 1-23rd of an inch in length. This is the most important operation in the preparation of paper and may take several hours. Some mineral substances such as barium sulphate, kaolin &c., are mixed with the pulp during the beating process, the idea being to fill up the interstices thus making the paper less porous, and capable of taking a better finish.

MAKING OF PAPER BY HAND.

In a wooden vat the pulp is largely diluted with water and kept in a continued state of agitation by suitable devices. The mould in which the paper is made is a piece of wire cloth and round this is attached a moveable wooden frame. The mould with this frame is dipped into the agitated pulp and taken out when the water drains through the wire cloth and a film of paper is formed. The wooden frame is removed and the moist sheet is pressed against a felt cloth and the mould removed. Another piece of felt is laid over this and another moist sheet similarly prepared is pressed against this felt. In this way alternate sheets of paper and felt are added until a sufficient number of sheets are prepared. This is then submitted to a great pressure and thus most of the water is pressed out of the sheets. The pressure is then released, the felts removed and the still moist paper piled directly one over the other and again pressed to get rid of a further quantity of water and to make them smooth. They are then suspended and dried slowly.

The paper thus far prepared is not suitable for writing on, as the ink will spread. To obviate this, it is subjected to what is called a sizing operation. There are various ways by which this can be done and one suitable size for this is a solution of gelatine in alum. The paper is dipped in the solution and allowed to dry. After this the sheets are again pressed.

Finishing:—The dry sheets are then "finished" i.e., the surfaces are made smooth and glossy. One

way of doing this is to keep the paper between two smooth sheets of metal and subjecting to enormous pressure.

It will now be interesting to compare this up-to-date method with the primitive way of making paper, which is still practised in some parts of Bengal. The following extract taken from "A memorandum on paper making and paper machine in the Province of E. B. Assam" by J. N. Gupta, I.C.S. (1909) describes in short the process.

PROCESS OF MAKING JUTE PAPER.

Fibres of hemp (mechat jute is the best) are soaked with lime water, kept in an open place for a night and exposed to the sun the next day. This process is repeated twice and then the fibres are cleared of lime stone and pounded in a dhenki (a pedal similar to the one used in husking paddy except that the arm of the dhenki is pointed with a piece of iron which falls on a stone having no hole in it). The powdered substance is wrapped in a piece of sacking and freed from all extraneous matter by gently moving the whole to and fro just below the surface of the water in a river or tank. The fine substance which is then obtained is put into a large basket which is half immersed in water and well saturated in it by constant stirring. A sort of lathee called "bara" (which serves as a sieve) is then placed on a frame work called "Khai" and is passed through the diluted pulp 3 or 4 times and on this a thin film of paper is deposited. This layer is overturned on a matting made of split bamboo called "Chouri." A second layer is then obtained and placed on the first and so on. The layers are taken one by one and dried separately in the sun on a bamboo matting. When the layer becomes perfectly dry, both sides of each layer are successively smeared with a mixture of rice flour and water and dried. Each layer thus becomes a sheet of paper which is then polished with a stone.

From a comparison of the above two methods it will be seen that there is a vast field for improvement in the local method and the matter is now under investigation.

The principal raw materials, namely, rags and waste paper which were used and are still used in some parts of Bengal for the hand made paper industry are no longer available at a reasonable cost, owing to the high increase in the price of cotton goods and paper. So, in order to revive this industry one should also find out cheap sources of raw materials for the purpose. The writer is investigating different kinds of waste substances to find out their suitability as paper making materials. The following have been examined and samples of paper prepared at the Laboratory. Any one interested in the subject can see these samples at the Dacca Farm Laboratory.

(1) *Water-Hyacinth* :—The first substance investigated, was water-hyacinth which as every one knows is a great pest and can be obtained easily and in large quantities. Good looking paper pulp as well as tough and transparent paper samples have been prepared from this. In Japan a process has recently been invented for making paper from sea-weed. The paper is said to be very strong and sufficiently transparent to be used as a substitute for window glass. As the composition of water-hyacinth is very similar to that of sea-weed, it is probable that similar substances could be prepared from water-hyacinth also.

(2) *Betel-nut Husk* :—A large quantity of betel-nut is annually exported from Bakerganj and Noakhali Districts. The nut is unhusked before exporting and the husk is almost always thrown away as waste. Samples of good paper have been prepared from this substance. As however it requires a large quantity of bleaching solution it may not be economically sound to attempt the preparation of white paper out of this; but unbleached brown paper can be made from it by treatment similar to that given to jute for paper making.

(3) *Jute sticks* :—The proportion of jute stick is about double the quantity of jute fibre that is produced from the plants and calculating from the quantity of jute produced in Bengal, it will be seen what an enormous quantity of jute stick is annually produced. Transparent samples of paper have been made from this material at the Laboratory. The weight of dry pulp obtained is about 50 per cent of the weight of dry jute stick. This compares favourably with the best kind of paper making material as regards yield. Another advantage is that it requires a very small quantity of bleach and the pulp can even be used very well in an unbleached condition.

The last named substance seems to be a promising source of paper making material as far as hand made paper is concerned. The investigation is still in progress and any one willing to take up the subject will get all possible help and information from the writer.

Industrial Fatigue Research.

Dr. F. Fox writes to the *Journal of the Society of Arts* :—

As Chairman of an Advisory Committee which has concerned itself with the "Care and Settlement of Subnormal Workers (ex-Service men) in Rural Industries," I should like to make a short statement on this subject, which must be intimately connected with the work of the Industrial Fatigue Research Board. The scheme of our Committee was to establish what has long been known on the Continent as middle and minor industry, in the rural districts of England, by means of small workshops, under a co-operative system. We have had in mind the large class of subnormal, or substandard, workers, injured in war, who are not always able to work six days a week and eight hours a day, and who—we have reason to think—will find a permanent settlement and occupation in lesser industries of this character.

Most important experience has now been gained in the Training Centres during the last few years, especially as regards partially disabled men. I understand that these men are no longer now received for training in ordinary trades, but that a new policy is to be adopted. Suitable minor and middle industries, both congenial and lucrative, and hitherto mainly carried on abroad, are now likely to be established in country districts throughout England for these men.

This being so, it seems important to consider what are the conditions under which such men can be trained and settled in such occupations with any prospect of success. As a result of considerable personal experience, I should like to offer four propositions :—

(1) *Regulation of Work*. That it is necessary for the success of reduced workers in rural industry

that the amount and nature of work done by each man shall be definitely prescribed, with due regard to his physical and mental condition from time to time.

(2) *Measurements, Records and Research.* That an approved and uniform procedure be adopted for measuring and recording each man's condition. In the case of subnormal and injured men the periodic observations should include:—

- (a) Condition of limbs (Arthrometry).
- (b) Condition of muscular power (Dynamometry).
- (c) Breathing Capacity (Spirometry).
- (d) Mental power and reactions (Psychometry).

A register of the capacity and fitness of all workers should be kept, and records made every three months.

(3) *Visiting Medical Staff.* As small industries will be widely scattered, and the workers will not be concentrated in large aggregations, it seems advisable that the necessary examinations and records should be undertaken by a small skilled visiting staff.

(4) *Treatment.* The remarkable success which has attended the large number of clinics established by the Government for out-patient treatment suggests the advisability of adopting the same principle for subnormal workers in minor industries and on the land, throughout the country. It has been clearly demonstrated that medical oversight of this kind greatly promotes the fitness of the workers, and increases their economic value.

Sisal Hemp.

We take the following from the *Journal of the Jamaica Agricultural Society*:

It has taken many years for sisal hemp to be considered a crop worth growing, but this *Journal* has steadily mentioned from away back the usefulness of such a crop for gritty limestone soils in the drier districts where practically nothing was being produced but bush. Articles on this subject have appeared regularly, and a full treatise on the subject was published in this *Journal* in 1913.

Not only is sisal a crop useful for making lands profitable that are usually only an eye-sore otherwise, but it will secure what has always been desired in the interests of the Island in general, viz., a variety of staple crops. We have for many years depended too much on bananas.

At the present moment there are only about 4,000 acres all told under sisal hemp in Jamaica. Around May Pen there are over 3,000 acres, and there are two factories in the vicinity. In a short time also, rope and twine will be manufactured in that neighbourhood from the hemp grown near by, and so save imports.

Then there is the Government Plantation at Lititz, on the borders of St. Elizabeth and Manchester, where about as unpromising a stretch of soil as could be imagined, is now growing sisal, and as there are some hundreds of acres ready for cutting, a factory has been put up and will soon be at work. At Hodges Pen in St. Elizabeth, a small private factory is also at work.

All during the war years until now, the price of hemp has been very high, but even if it falls considerably, there will still be profit in it. At any rate, it seems that we are likely to produce it as cheaply as anywhere on earth.

The pioneers of the sisal industry were the Anderson family at May Pen.

Sisal has been exported since the year 1909 steadily. During these last few years our exports have been increasing, if slowly, and in the year 1921 we should quadruple our exports over 1919. Even then, it will only be a small total compared with what we should grow and ship.

We are interested in finding the following report made by the Secretary which was printed in the newspapers of date, 14th June, 1909:—

On Tuesday morning we went on to Mr. Eric Anderson's place, "The Cottage," next to Hillside Estate. Nobody could think there are any industries going on about, except growing sugar. But in Mr. Anderson's backyard there is brick-kiln to supply bricks for the sugar estate, a cotton gin and a fibre decorticator for Sisal Hemp. We visited the field of Sisal Hemp. As these plants take five years to grow and the leaves to be cut, cotton had been planted between as a catch crop. It did not appear to be a very promising place for cotton cultivation although seemingly typical for Sisal Hemp, being mostly a gritty hillside. However, the cotton had done well and the returns had been larger than any other place, but it is difficult to calculate the exact cotton acreage owing to its being a catch crop. At any rate it will be highly profitable. The Sisal Hemp also looks a promising venture. Sisal takes no particular cultivation, likes arid soil, and as Mr. Anderson has an effective machine, which we saw at work, the venture seems pretty safe.

Artificial Farmyard Manure.

No class of soil cultivators will be more interested, says the *Gardeners' Chronicle*, than fruit-growers in the Rothamsted discovery of the simple method of converting straw into manure without the help of live stock.

Fruit-growers, as a rule, do not keep much stock, if any, and they are finding it increasingly difficult to obtain sufficient supplies of town stable manure. Yet they cannot grow their crop for long without some form of organic nitrogenous manure, of which farmyard or stable manure is the best. As a result of investigations carried out at the Rothamsted Experiment Station, it has been found that straw can be converted into an excellent imitation of farmyard manure with the help of nothing more elaborate than water and some soluble nitrogen compound, of which sulphate of ammonia is at present most easily obtainable. Repeated experiments have shown that the most rigid breakdown of straw occurs when some source of nitrogen is supplied, and then only in those cases where the reaction of the solution is neutral or slightly alkaline. As sulphate of ammonia tends to be acid, finely ground chalk or limestone must be used with it to neutralize the solution. For general purposes three-quarters of a hundred-weight of sulphate of ammonia and one hundred-weight of finely ground chalk per ton of straw are sufficient to induce fermentation. The process of making the manure is quite simple. The only trouble arises from the tardiness with which the straw takes up the moisture necessary for fermentation. It is suggested that the most effective method is to water the straw lightly at first, and leave it for a couple of days. During this time a slight fermentation with increase in temperature sets in, rendering the straw more capable of absorbing a second slight application of water. When examination shows

that the interior of the heap has become uniformly moist, the sulphate of ammonia and chalk can be broadcasted over the surface and watered in. After this fermentation soon becomes more rapid, and may be assisted by turning the heap to admit air, just as is done with ordinary farmyard manure when the desire is to make it heat and rot down quickly. Nitrolim may be used in place of sulphate of ammonia, in which case no ground chalk is required. Manure made as described must be inferior to real farmyard manure in that it is not a complete fertilizer. It must be considered as supplying only nitrogen and humus. But it is an easy matter to provide the necessary phosphates and potash in the form of mineral fertilisers.

Flax-Pulling Machines.

An account of some public trials of flax-pulling machines conducted by the Irish Department of Agriculture and Technical Instruction is given in the *Journal of the Ministry of Agriculture* for November, 1921, from which the following notes have been taken:—

The machines took part are:—

(1) The Crawford-Bennett machine made by the York Street Flax Spinning Co., Belfast.

(2) The Fibre Corporation Machine made by Messrs. Marshall, Sons & Co., Ltd., of Gainsborough.

The Crawford-Bennett Machine is self-propelled, and the Fibre Corporation Machine is built to attach to a motor tractor.

The full details of both the machines and how they have worked have been recorded. The quality of flax left unpulled by these machines under the ideal condition of the trial was scarcely significant, being for the most part, short stems which usually fail to survive the operations culminating in scutched fibre. It is doubtful whether either machine would be able to deal with any crop if "laid" at all.

In the performance of these two machines there appears to be a very big advance towards solving the flax pulling problem, and with the prospect of further improvements before next season, one may reasonably hope that the machine pulling of flax crop will be commercially possible at no distant date.

Cotton and Cotton Goods.

Writing in the *Near East* Sir Charles W. Macara, Bart, says:

Anyone who knows the facts knows that the difficulty which the labour question presents in India must itself make progress very slow, and especially if the native mills are to invade the finer section of trade which Lancashire has made so peculiarly her own. There is no stability about Indian labour. The operatives are drawn from an agricultural population who have but a transient interest in mechanical industry, and consequently the prospect of getting a sufficiency of highly-skilled workpeople is very remote.

Lancashire, on the other hand, has the inherited skill of generations to fall back upon, and can rely on operatives who have no equal in the world. And not only is the ability of our workers unmatched, but it is a well-known fact that it takes the combined efforts of three workpeople in the East to equal the output of one Lancashire mill operative.

With such advantages as Lancashire has in the way of production and skill, it is easy to see how impossible it is for India to compete, and perfectly puerile to think that Gandhi with his out-of-date hand-loom crusade can have any but the most insignificant effect upon the situation. He might as well try to fight the modern weapons of war with bows and arrows.

WHERE GANDHI MIGHT DO REAL SERVICE.

India may, and doubtless will, develop slowly, as in the past, her cotton trade in the future and to this Lancashire has not one word of discouragement to offer, but for the present she is totally incapable of doing without the assistance which Lancashire alone can give. Mr. Gandhi may be sincere in his intentions, but what he is doing at present is simply to stand in the way of the natives getting the cotton goods which Lancashire can supply her with more cheaply than anyone else.

If Mr. Gandhi wishes to do a real service to India and to his fellow-countrymen, he could best do it by encouraging the growth of more and better raw cotton. India, I have always held, could supply Lancashire with as good cotton as ever America produced if she properly organised and cultivated her crops—better by far than any other country in the British Empire. Would it not be a fine ideal to associate the two countries in a great cotton bond of fellowship, India to use her magnificent soil and climate for the production of raw material of the first class, and England, which has so many advantages on the manufacturing side, to exchange the cotton goods in which she excels for the cotton India could raise?

THE INDIAN NATIVES' BEST FRIEND.

This suggestion by no means precludes the native mill-owners of India from making all the cloth—it is possible to make in that country, for, as Mr. Rao has been quick to see, cloth will in future be "wanted in continually increasing quantities for backward communities, and large numbers of aborigines yet remain to be clothed." That is the situation exactly. There is abundance of work for both Indians and Englishmen in supplying the wants of India, and there need be no jealousies or restrictions on either side. It is one of the truisms of the cotton trade that the more cotton goods are known and the more they are required; and it is a most noteworthy fact that in most countries where English textile machinery has been introduced, the people who have begun to manufacture for themselves have called more and more for the products of Lancashire spindles and looms. It is a mistake to imagine, therefore, that Lancashire has the slightest feeling of antagonism towards Indian manufactures; all that we ask is a fair field and no fiscal disadvantages, and we ask this as much in the interests of the natives of India as ourselves. One thing that Mr. Gandhi and his friends should keep before them continually is the fact that every advance in Indian import duties means an increased hardship to the native population, for the profits of protection go to the enrichment of the factory masters of their own country, and not to the cheapening of the clothing worn by the poorest of the people.

LANCASHIRE STILL SUPREME.

Therefore, I repeat that it is a total impossibility for India to get the goods she requires in her own country. The hand-loom which Gandhi relies upon cannot hope either to compete with the power loom or make up the huge deficiency there would be if

Lancashire cotton goods were banned; and the slow progress made in developing Indian mills in the past shows how little is to be expected for many years to come in the way of meeting the demand. Granted that there is an acceleration in mill building, the progress must be painfully slow owing to the fact that the textile machinists of Lancashire, upon whom Indian mill-owners depend almost wholly, are so overwhelmed with arrears of repairs, renewals, and extensions to home mills that they can give little attention to orders from other parts of the world.

Taking all these circumstances into consideration, I say that there is a vast deal too much made of the competition which India can offer, either by power or by hand, and that Lancashire is in no danger of losing that supremacy in the cotton trade that she has won by the sheer grit and merit of her sons and daughters, aided by a climate which is unmatched in any part of the world for special purposes of producing cotton goods of the highest quality.

THE RE-CAPITALISATION BOGEY.

From what I have written above, it will be seen that those engaged in the cotton trade in England need have no fear of losing their most important market, nor can I see anything else which is likely to bring permanent injury to the staple Lancashire industry if our affairs are managed with wisdom and foresight. The troubles we have had to meet during the past twelve or eighteen months have been altogether exceptional, and have been brought about by the extraordinary conditions caused by the war, and the mal-administration of those who have been responsible for the Government of the country during the past half dozen years.

One has seen it stated in the press and elsewhere that "over capitalisation" was responsible largely for the state of things we have had of late. To make statements of this character is to display the utmost ignorance of the trade and the causes which have been at work. I have followed the re-capitalisation movement very closely, and I make bold to say that it is this re-capitalisation which has been the salvation of the industry. The enhanced value of mills and machinery made it highly necessary to put concerns on a new basis, while it had been obvious to anybody who has studied the matter that had our mills not been re-capitalised, they would in a comparatively few years have paid away all their capital in excessive war taxation.

MILLS STILL WORTH DOUBLE THEIR COST.

This has been demonstrated in the cases of the few exceptions which have refused to re-capitalise. They have found themselves with nothing to replace their machinery, and have been obliged to raise money either by means of "call" or in some other way. Far from prices paid for cotton mills being too high, I do not think that buildings and machinery can be replaced to-day for double the price paid for the most costly of these concerned.

It is only necessary to give in support of what I say the figure of the cost of building mills before the war and at the present time. In pre-war days it was possible to build a ring spinning mill for about two guineas a spindle, and a mule mill for 25s. a spindle. At the present time a ring mill cannot be put up at less than seven pounds a spindle, while a mule mill will cost fully five pounds.

STICK TO YOUR SHARES.

The lesson to be drawn from the state of things I have here set forth is one of encouragement to all who are either engaged in or connected with the industry. Prosperity is undoubtedly returning, and I have great confidence that before long both the workers and those who have invested their money in the trade will again reap their reward. It is unlikely that the world in future will be satisfied with a reduced standard of clothing, and seeing that cotton, it is estimated, clothes nine-tenths of the people of the world, and is by far the cheapest of clothing, and that before the war the trade was developing at the rate of four million spindles a year, I cannot but be fortified in my opinion that cotton will soon come into its own again.

I would, therefore, bid workers to be of good cheer, and advise shareholders whenever possible to hold fast to their shares, so that they may be compensated for the lean times we have gone through of late. The cotton trade is one of the soundest and best organized we have in this country, and cannot but do well again when it had freed itself from all the harassments and troubles brought upon it by the war.

Topics in the Journal:

(March, 1922.)

Journal of the Ministry of Agriculture. Ploughing and Ploughing Machines, by H. G. Richardson, B. Sc., and G. C. Fussell.

Hindustan Review. Economic Culture as depicted in Valmiki's Ramayana, by J. N. Samaddar.

Rubber in Paper Making.

A correspondent writes to the *Madras Mail* :—

The *Manchester Guardian* draws attention to some recent experiments in paper making which would appear to have bearing on the future utilization of Indian products. The series of booklets now being prepared by the Rubber Growers' Association will probably have something to say on this as on many other new outlets for the industry. It has been found that by introducing small percentages of rubber latex into paper pulp the resulting finished product gains largely in tensile strength and folding resistance. The future possibilities, of such a process becomes commercially successful, of a new market for rubber need little explanations. Thus, taking the world's paper production at 10 million tons a year and assuming that latex were only used for half this output for the manufacture of paper containing on an average, only 1 per cent. in weight of latex, this would mean the consump-

tion for this purpose alone of 50,000 tons of rubber annually. One advantage claimed by the originator of the process for the use of rubber latex on paper production is that it does not involve the use of new machinery or method in treating the pulp with which the latex readily combines. Moreover, rubber latex when used in larger proportions in the manufacture of fabrics based on special fibres widely enough grown in India, but, at present, little demand in the making of paper as such, helps to produce a material akin to leather rather than paper in consistency. These new fabrics possess great strength and are likely to replace leather and linoleum in different uses. Combined for example, with bamboo cellulose of which it is calculated that 15 million tons are annually available from India alone, rubber latex may ultimately form the basis of a new industry for the manufacture of goods pliable as paper and as durable as leather.



Engineering Notes.



Compressed Air in Grinding.

A visit paid to a large engineering works in the South of England showed that although an air compressor plant was part of the equipment, a supply pipe was not run to the grinding shop and there were no pneumatic appliances of any kind used therein. Compressed air as an industrial power has been in use for over twenty-five years but it seems that it is only recently that it has been used in grinding shops and that the practice is by no means as universal to-day as would be imagined, says a correspondent in the "Near East":—

With an available supply of air at a pressure of from 50 to 75 lb., a large amount of cleaning work can be done more quickly and more safely than in any other way. A blast of air will clean out the centres of a work piece far more speedily, previously to placing it in a grinding machine, than they can be cleaned with rag or waste. The momentary directing of the air blast on the ends will blow every trace of swarf or grease away and leave them as clean as when first cut. In fact, any piece of machinery, no matter how complicated in form, can be cleaned, intelligently, by compressed air more quickly than in any other way. Intelligently, in this connection, means taking care not to blow dirt from one part of the machine to another.

Any fully automatic grinding machines that chuck, grind, gauge, and discharge pieces continuously should be fitted with an air blast to remove dust and particles of abrasive, and here it may be said that where machines of this type are so fitted there is often room for a re-arrangement of the air blast so as to clean foreign matter out of every moving part. Semi-automatic grinding machines should be so arranged with air blasts that every part is kept scrupulously clean, especially the limit stops and automatic feed knock-out tackle which prevents work being ground undersize.

There is much to commend the use of pneumatically operated grinders, as one of these comparatively small machines can be fixed on the bench or on a machine-bed as a tool post or centre grinder and so do work more economically than some larger machine. Again, the small pneumatics can be started and stopped so easily and used in such positions that they are often more economical to use than the heavier electrically driven grinders, advantageous though these are in general machine shop practice. With both the electric and the pneumatic grinder the design is so simple that the working parts are reduced to a minimum, and so much is this so with small pneumatics that no attention whatever is required, with the majority of designs, beyond giving a few drops of oil every week or so.

Two of the most fertile causes of trouble in working small cupolas are the use of insufficient limestone and attempting to melt too heavy a charge of iron. Another, but less common, is the use of insufficient coke between the charges.

In modern practice a 24-inch cupola should be able to melt about two tons, or as a maximum 4,500 lbs. of iron per hour and as 30,000 cubic feet of air are required for every short ton, or 2,000 lbs. of iron, it follows that about 68,000 cubic feet of air per hour, or 1,140 cubic feet per minute are needed. As this does not take into account loss by leakage or friction, a blower used with such a cupola should be able to supply about 1,500 cubic feet per minute. The fan should, therefore, be connected with the wind box round the shell of the cupola by a pipe 10 inches in diameter and the wind box should be connected with a continuous tuyere through the lining at least 4 inches high, or else it will be impossible for the air to enter the body of fuel freely and in sufficient volume.

The weight of the iron charge depends in a great measure on the quality of the coke, and a charge that may be quite right where high-grade coke is used may be far too large when the coke is not of such good quality. Taking a 24-inch cupola as an example, the iron charge, where low-grade coke is used, should not exceed 300 lbs., a weight which may be increased to 500 lbs., as a maximum when the coke is known to be of a suitable nature. Where there is some reason for doubting the quality of the latter, a charge of 40 lbs. of coke and 300 of iron should be tried out for results and the amount of iron increased and of coke decreased with succeeding charges until a maximum of 500 lbs. of iron and 30 of coke is reached. As regard the bad coke the thickness of this, before charging, should be such that it will extend about 30 inches above the tuyeres. In regard to the quantity of limestone used, at least 30 lbs. of broken stone should be spread over each charge, including the first, and only under very exceptional circumstances should a less amount be used.

The best practice is to provide a slag hole, which should not be more than about two inches in diameter, either at one side or to the back of the cupolas, and at a distance of about 15 inches above the sand bottom. Where short heats are the practice it will not be necessary to open this orifice, but if the heats are of anything from 2 to 10 hours' duration, the hole may be left open with advantage the whole of the time.

CEMENT MOULDS FOR CASTINGS.

A certain amount of interest has been aroused in connection with antique Chinese and Burmese hollow ware which had found its way into collectors' hands at various times, but which, until recently, has rarely been inspected by any save those who looked on them from an artistic point of view alone.

Metal experts who have seen them have expressed their astonishment at the large superficial area and the thinness of the castings.

This art of casting metals thinly seems not to have been confined to Chinese and Burmese craftsmen. A good deal of Siamese brasswork is extremely thin and a pair of Persian lamps of about 32 square inches superficial area are only one-sixteenth of an inch thick, and from the surface marks it has been assumed that very fine sand was used for the moulds.

The secret of manufacture has now been made public, the discovery arising from an inspection of some Chinese cast iron bowls, which were over four feet in diameter, 12 inches in height and in no place more than one-sixteenth of an inch in thickness. The foundry where these pots were made was visited, and it was seen that they were cast in permanent moulds made of cement composed of a mixture of finely broken tile, clay and burned lime, which will set with a perfectly smooth surface in a few hours and will withstand any reasonable heat.

SOLDERING ALUMINIUM.

Many years ago, in connection with an electrical undertaking in the North of England I was greatly

interested in the problem of soldering aluminium. At that time we met with no success; the facility with which the metal oxidised being a fatal bar. Since that time many more or less successful methods have been devised and one of the most promising has just been described in the *American Machinist*. It is said to have proved highly satisfactory in use and to be lasting which after all is one of the main considerations.

A pure aluminium soldering "iron" is used, made from a piece of aluminium rod of ample size for holding the heat. The parts to be soldered are tuned with a solder consisting of 81 per cent. tin, 16 per cent aluminium and 3 per cent copper, a composition which, if my memory serves, has been used before without any undue measure of success. But this time a different flux is used and further, the solder is prepared differently the copper being first melted and the aluminium added a little at a time, the mass being stirred and kept constantly in motion by a heated iron rod. The tin is then added with a small portion of tallow and the secret appears to be in the keeping all these metals at a heat only just sufficient to enable them to flow freely, guarding all the time against overheating.

The Timber of India and Burma.

The following is an extract from Mr. Alexander Howard's lecture recently delivered at Delhi to the members of the Indian Legislature:—

The economic aspects of this subject for any country include not only the desirability of increasing the Government's revenue to the very utmost but also the uses of a country's timber within its own boundaries. Of the necessity for increasing revenue I need not speak as I have been in the country long enough to recognize that everyone connected with Government is fully aware of it. Figures are within your reach and you are all probably well acquainted with them which show the immense wealth you possess in your forests. The mere possession of this wealth, however, will not produce what is required without wise and progressive management. When you reflect that, in the United Kingdom alone the value of timber imported in 1913 was nearly 34 million pounds and that India and Burma contributed out of this only £40,000 exclusive of Teak, you will see what a market is open to you. This is without taking into any account the enormous demand of America, Africa, Europe and other countries. It is of course obvious that wherever India can sell her timber produce in the markets of the world and purchase for her own requirements more economically there is a substantial revenue accruing.

In regard to the practical uses of timber within your own boundaries I consider that the greatest possible ignorance has prevailed in the past. It can be taken as a fairly general rule that in many timber-producing countries, particularly in the tropics, timber which are most esteemed by the local inhabitants often prove to be the least valuable for export. On the other hand timbers which are of little use in the country of their origin are of great importance elsewhere. There are of course exceptions to this rule. What we want to do here, however, is to sell abroad the timbers that are not wanted in India at the highest possible price and use here and even if necessary purchase from other countries timbers which are of not so great value.

The general idea, however, common throughout

India and Burma that Teak is the only wood to be used is entirely mistaken. The railway carriage in which I journeyed here was trimmed with American Maple panels. I have also seen in other carriages American Walnut, Australian Silky Oak and other foreign timbers. What surprises me is that for every one of such timbers as these which you purchase from other countries you possess within your own boundaries infinitely more valuable and suitable woods for the purpose which I have not seen in any railway carriage and the cost of which even now must be less than a third of those actually used in these cases.

Use of By-Product.

Carbon black, a product of natural gas, is a fluffy, velvety black pigment, which is often confused with the somewhat grayish lamblack, derived from oil or other carbonaceous material. It is superior in quality for most purposes, but not for all lampblack being preferred for certain pigments in paints. From the U. S. Geological Survey report, by Mr. E. G. Sievers, it appears that the falling off in the production of carbon black, which has created so much alarm, amounted to 17 per cent. in 1920. In West Virginia the decrease, due to the lessened gas supply reached 11 per cent., but this was partially offset by a 32 per cent. increase in Louisiana, the former State, however, still holding the lead in production. As the Louisiana supply of gas is still in smaller demand for domestic use, carbon black plants are being moved to that State. For more than half a century, carbon black has been required for printers' ink, it is extensively used as colouring reinforcing material in the rubber industry, and is in large demand in the paint trade. About 10 per cent. of the annual production is divided among such industries as the manufacture of stove and shoe polish, board, buttons, carbon and other black and gray papers, typewriter ribbons, carriage cloth, celluloid, electric insulators, cement colours, crayons, drawing and making inks, artificial stone, black tile, and tarpaulins.

Leaders in Finance and Industries.

CHARACTER SKETCH OF THE MONTH.

Mr. Austen Chamberlain.

By E. T. RAYMOND.

We take the following from "Uncensored Celebrities" published by Mr. Fisher Unwin, now in its third large impression, one of the most sought after books just now. The sketch will be read with interest by our readers in as much as Mr. Chamberlain occupies just now a prominent place in the Conservative party politics.

Mr. Austen Chamberlain's return to office was welcomed mainly on the ground that he is an honest man, and condemned mainly on the ground that he is a politician.

Regarding the first point, the implication is sufficiently alarming. Lord Morley, in his last book, tells how, as Irish Secretary, he "turned down" a nomination to the County Bench because the person in question had the character of being "moderately honest". His lordship took the old fashioned view that moderate honesty is as unsatisfactory as reasonable chastity. We have been accustomed to look on integrity in public life, not as a virtue in itself, but as the indispensable foundation of all other virtues. One can imagine Gladstone's feelings had he been publicly described as a statesman of conspicuous honesty and some capacity. Have we really arrived at the pass when we must be told that if the country is not safe in our statesman's hands, at least the country's safe is safe?

For the moment we will assume, however rashly, that every public man is honest, and pass from Mr. Chamberlain's chiefly advertised virtue to his chiefly advertised crime. It is, perhaps, useless to try to stem the cataract of nonsense now roaring against "professional politicians." But it may be said at once that Mr. Chamberlain's solitary claim to a place in the Government resides in this very fact that he is first and foremost a politician—that is, that he has a considerable grip of Parliamentary things and much knowledge of official ways. True, he is not the sort of man one would naturally choose to ride the whirlwind and direct the storm. "Pitt is to Addington as London is to Paddington," wrote Canning to another amiable mediocrity. Mr. Chamberlain is decidedly Paddingtonian. His abilities, though sedulously cultivated, are at best second-rate; he lacks, above all, power; he rather reminds one of those pallid city youths who, with a bedroom exerciser, attain a certain muscular development, but never achieve "punch" or natural vigour.

In the case of such a person it is merely foolish to blame Mr. Muldow's system for his rather unsatisfactory condition; the question is rather what he would have been without Mr. Muldow. When one hears an Oxford graduate talking great nonsense (which happens occasionally) the first tendency may be to condemn the University; second and

sounder thoughts prompt the inquiry what sort of nonsense the same man would have talked had he stopped short at a primary school. Certainly it is an unprofitable business sending poor grist to a first-class mill, and the care lavished on Mr. Chamberlain's political education doubtless might have been better expended on another subject. But to suggest that Government, of all trades, is one in which talents are not improved by training is merely silly, and to complain that Mr. Chamberlain knows at least part of his trade is surely irrational.

One part of his trade he knows very well indeed. He is an excellent House of Commons man. He would probably make a very fair leader of the House, and it would not be surprising to learn that the astute Prime Minister, with an eye to possibilities, had earmarked him for that position should it fall vacant. Second-rate men often make first-rate leaders, just as some extremely brilliant statesmen have failed calamitously in that capacity. The House of Commons is like a certain type of horse, which will allow a favourite child to manage it, and will respond to a master whip, but shows every vice in the hands of a semi-competent. Some men dominate the House by sheer force of character; others conquer by tact; still others get their way because the House likes them, and knows they like the House. The latter was the secret of the conspicuous success of very ordinary people like W. H. Smith and "C.-B.," and Mr. Chamberlain might well develop in the same direction. He has, it is true, some handicaps from which they were free. In humour he is slenderly endowed, and he has not that cheerful sense of his own limitations which is often the greatest asset of the second-rate statesman, enabling him, without raising jealousies, to guide men with whom he could not seriously compete.

"C.-B.," by shrewd judgment and good humour, succeeded in managing a team of which seven individuals out of ten were his intellectual superiors. Mr. Chamberlain has not quite learned that *savoir faire* which is based ultimately on perfect self-knowledge. There are times when he still gives the impression of believing himself to be a statesman in the grand manner. But the amiable illusion has shown signs of weakening since the Tariff Reform days; it suffered one great shock when Mr. Bonar Law was chosen Unionist leader, and another when the Mesopotamia report was issued. In regard to that melancholy business Mr. Chamberlain's prompt recognition of his responsibility was to his credit, but common sense rebels at fellow-politicians' description of his resignation as a mere quixotry on the part of a man only nominally to blame. Mr. Chamberlain's fault was negative but real. It was not so much that he was wrong as that he was not vigorously enough in the right.

But vigour is just the quality Mr. Chamberlain

lacks, though he tries hard to imitate the masterfulness of his father. I once had the singular experience of visiting the house of a rich man with a gruesome hobby. He had spent his life going round the great picture galleries of the world and employing copyists to reproduce their chief treasures. These he put in gorgeous imitations of old Florentine frames, and, at a cost adequate to papering his walls with minor masterpieces, was able to flatter himself that he was surrounded by the highest in art. I am reminded of that disconsolate collection of sham Titians, Rembrandts, and Raphaels, stiff and smooth as anything at Madame Tussaud's, whenever I happen to be at the House of Commons when Mr. Chamberlain is "up". He is so like, yet so unlike, his father. The outlines are there, as in Signor Spaghetti's copies, but there is no vigour of colour, no force of expression, no power in modelling. All is flat and tame. Joseph Chamberlain's words cut like a whip; his anger had sometimes almost the effect of physical shock; his monocle could be as terrifying as the Tye of Polyphemus. Mr. Austen's is no more formidable than Mr. Weedon Grossmith's. The elder man penetrated his utterances with real passion. The younger tries to do the same, but his artificial indignation rather recalls the dog that went mad "to serve some private ends". Men easily recover from that sort of bite.

In middle age, Mr. Austen Chamberlain has to some extent dropped conscious imitation, and he is getting to be as much himself as he will ever be. Temperamentally he differs from his father, and is really what his father never was—a Conservative. But he has not shaken off what his father also never lost—that kind of provincialism which one may call suburbanity. With all his great qualities, Joseph Chamberlain retained to the end some trace of Camberwell. He had Mr. Lloyd George's bad habit—the two men have many points of resemblance—of discussing great affairs in a dialect neither stately nor statesmanlike. He was the man of a world rather than a man of the world. He chid foreign Ministers as if they were Irish Members. He told the French to "mend their manners" with the same readiness that he called Mr. Dillon a "good judge of traitors". In his dealings with rural questions he was as Cockney as Mr. Pickwick at Dingley Dell. With less excuse, Mr. Chamberlain is even more limited. He had

industriously "got up" the Empire with the help of the Blue Books, but shows no real understanding of it, and no man in affairs knows less about Europe. His abilities, such as they are, are simply suited to the things of the caucus and the House of Commons. There he makes a quite respectable display. He always speaks neatly, and sometimes, as when moved over the Press attacks on Sir William Robertson, with force and point. Add that he is a fair administrator, and you have said all that can be said.

That, with so slender an equipment, Mr. Chamberlain can hardly be called a failure is surely sufficient rebuttal to the unintelligent outcry against the "professional politician". That poverty of political talent which has occasioned the demand for "business men" is, in fact, chiefly due to the increasing domination of the House of Commons by elderly tradesmen. A seat in Parliament is no longer the object of young (and poor) ambition; the House of Commons is rather a Tom Tiddler's ground where the "arrived" grub for ribands and titles. If any moral is to be drawn from Mr. Chamberlain's position it is the need of something to replace the old patronage system which secured a steady supply of brilliant youngsters for the public service.

Our "democratic" system has done away with the one valuable feature of the borough-mongering days—the search for talent irrespective of wealth and social position. But it has greatly intensified the reverence paid to the hereditary principle. The owner of a dozen rotten boroughs might allot six to his friends and relations, but he wanted to get political value out of the rest; hence the hungry search for brains and the rise of Pitt, Canning, Gladstone, and so many others. If Mr. Chamberlain is found "indispensable" because he has learned the tricks of the trade, and is still only a second-rate man, the inference would seem plain. Instead of declaring that there are no tricks to be learned, and laying down the principle that in politics there shall be only amateur players, it would be more intelligent to teach those tricks to young men of real talent. But that would mean in many cases a preference for plain Smith and Brown over Vavasour-Smith and Ponsonby-Brown, and it may be doubted whether British snobbery, more rampant than ever in the decline of English aristocracy, would assent to so levelling a doctrine.

National Debts of To-day.

Comprehensive information as to the national debts of the allied nations and their indebtedness one to another are furnished in a report recently issued by the United States Senate in connection with the bill authorizing the creation of a commission to deal with the refunding of obligations of foreign governments. The national debts, population and indebtedness per capita of the United Kingdom, France, United States and Italy are given as follows:—

	POPULATION	DEBT	PER CAPITA
United Kingdom	46,189,000	\$37,910,000,000	\$822.54
France	41,476,000	51,000,000,000	1,229.62
United States	105,683,000	23,922,000,000	225.35
Italy	36,740,000	18,650,000,000	507.63

France is credited with having loaned \$2,717,888,500 to foreign governments, including \$1,111,000,000 to Russia and \$584,300,000 to Belgium. In these debts no interest rate has been agreed upon and no interest is being paid. Great Britain, up to March 31, 1921, had loaned \$9,465,336,000 to allies and dominions, of which \$2,728,404 was to Russia, \$2,707,020,000 to

France and \$2,317,243,000 to Italy. The debts owing to the United States are given as follows:—

	PRINCIPAL	INTEREST	TOTAL
Great Britain	\$4,136,318,358	\$509,172,742	\$4,675,492,101
France	3,358,104,083	358,410,444	3,716,514,527
Italy	1,643,034,050	202,279,732	1,850,313,728
Belgium	377,554,293	42,699,698	420,263,997
All others	690,580,544	63,316,357	666,695,822

The United States Treasury holds \$10,150,401,305 of obligations of foreign governments. Of this amount \$9,434,774,829 is held for advances made under the various Liberty bond acts; \$574,673,710 was received from the Secretary of War and from the Secretary of the Navy on account of sales of surplus war materials; \$84,093,963 was received from the American Relief Administration and \$56,858,802 was held by the United States Grain Corporation. The interest accrued and unpaid up to and including the last interest period upon these obligations amounted to \$1,178,879,925 and the amount of interest heretofore paid was \$478,863,632.



Book of the Month.

THE FRUITS OF VICTORY.



The Late Mr. Keir Hardie.

In a review of *The Life of Keir Hardie* recently issued, the "Nation" thus writes:—

It is not possible to write a life of so simple and constant a pattern as Keir Hardie's and to introduce a great variety of texture, or even of color, into the narrative. Hardie lived for one thing, which he accomplished. He founded the Independent Labour Party. The glory is his and his alone, and so was the sacrifice. A plain domesticity, a few friends, many enemies, a Pauline record of journeys and exhortations—and then death. Hardie's gifts were as his career. Mind and character were fitted to this apostle; and were sufficiently rather than lavishly endowed for it. He spoke with the natural command of good English that so many Scotchmen possess, with fervour often, with sincerity always—above all, with concentration. Mr. MacDonald truly says of him that he was a Moses, summoned to lead his people out of bondage, though not into the Promised Land. He led them. He brought the intelligent workmen of three countries out of Liberalism, and to a less degree out of political indifferentism. He was not an extremist. But for his "call" to organize the workmen as a self-dependent force, he might have ended his days as a Radical pacifist. But the moment he put on the prophet's mantle it could be seen that only he was fitted to wear it. Some of his contemporaries in the Labour Party hated Capitalism as much as he did, and had a more reasoned, certainly a more revolutionary, answer to it. But none had a tithe of his representative capacity. There stood the absolutely independent man. Hardie entered the House of Commons without belonging to it, save as an ambassador from a new and hostile power; and every speech and gesture he made there was addressed to the unborn thing in politics, not to the finished one. John Burns, destined to mix with middle-class politics and serve in middle-class Cabinets, made his spiritual accommodation with Parliament before he had been six months a member of it. Hardie never.

HIS PRIDE OF CLASS.

Yet within the limits of the career he proposed for himself, Hardie was a man of great personal attraction. Mr. Shaw called him the "damnedest natural aristocrat in the House of Commons," and Mr. Stewart adds the closer definition that "he possessed pride of class in the superlative degree." Indeed, his demeanor was such that if England had become a Socialist Republic within his lifetime, Hardie would have been chosen by acclamation for the Presidency, merely on account of his obvious personal equipment for the job. His dignity was a different thing from Gladstone's, for example, though in its way quite as distinguished. Gladstone's grand air fitted itself to the frock-coat and stove-pipe hat; Hardie's to the tweed suit and the corn-cob pipe. His choice of attire was not part of the artist's desire for

representative perfection, still less was it a self-conscious pose. Hardie wanted to notify his arrival at Westminster, to show that the workman was there and what he looked like. The effect was his justification. The House neither laughed at him nor liked him. But it opened its eyes. Till it saw him, it did not realize that it was possible to figure a State in which totally new conventions might hold, yet retaining great spiritual refinement. To this idealism Hardie was a bodily witness. He did not believe in the capitalist classes, and distrusted their morality, finding it incompatible with the Christian religion. But it always seemed to me that there was an æsthetic element in his distaste; he considered them vulgar.

MARXIANS AND HARDIE.

There was a second note of individuality in Hardie. Mr. Stewart says correctly that he was not a doctrinaire Socialist. He regarded the transfer of wealth from private to public ownership as an "incident" in the Socialist crusade rather than its all-important end, therein interpreting three-fourths of its history in world-politics. Socialism appeared to him as a new force in the world of industry, a movement for the social and moral enfranchisement of the manual workman, with special power to deliver him from conscription and war. He thus came into conflict with eminent Marxians like Mr. Hyndman and eminent propagandists like Mr. Blatchford, who, having preached the Social Revolution all their lives, threw it up when the war broke out and fell back to average Nationalism. Hardie, on the other hand, identified all Imperialism, British or foreign, with capital, while Socialism presented itself less as an economic doctrine than as the promise of a new moral world, a state of brotherhood. He was, therefore, much more of an internationalist than either the Marxians or the Fabians, disagreeing with the latter on the Boer War and with both on the world-war. Yet for all his idealism he was the one working-class leader of his time to recruit a definite Socialist army and to fix the mould into which the main force of Labour-Socialism was destined to flow. Other Socialist leaders established cliques or parlor parties. He formed the mind of the workman.

HIS UNFLAGGING INDUSTRY.

This feat was due, as Mr. Stewart's excellent biography abundantly shows, less to power of intellect than to Scottish grit and the habit of unflagging industry, and most of all to the fact that, as I have said, Hardie was a great representative man. He appealed to the religious sense of the workmen, and that was a source of power; but having worked through the average Liberalism of his time, he determined to cut them right away from middle-class politics. Henceforth the workman was to stand alone, as he stood. There were grave weaknesses in this position, as our after-war politics have shown. But it shook conventional party life to its found-

ations. And the whole process was logically and clearly developed. Hardie first took his own fellow-workmen, the miners, out of the Liberal camp. Finally through the medium of the L. R. C. and the I. L. P. he set up the politically independent Labour organization. Mr. Beer, the London correspondent of "Vorwärts," and the historian of British Socialism, truly describes this as the largest individual contribution ever made to the Socialist cause in Great Britain:—

"His salient, clear-headed, and consistent efforts in the first years of the L. R. C. on behalf of the unity and independence of organized Labour would alone be sufficient to raise him to the front rank of Socialist statesmanship. For what is the essence of modern Socialism as Mar taught it? The political independence of Labour. And what is the foremost duty of a Socialist in the class struggle? To divorce Labour from the parties of the possessing class. All that Keir Hardie has done, more by virtue of a practically unerring proletarian instinct than by theorizing and speculating about revolution and so-called constructive Socialism. Socialism is not made, but it is growing out of the needs and struggles of organized Labour. The most simple Labour organization, fighting for high wages, shorter hours, and better Labour laws, does more for Socialism than all the Utopian books of Wells, all the Swiftian wit of Shaw, all the revolutionary speeches of Hyndman, and all the sentimental harangues of Grayson."

LABOUR AND WAR.

As to Hardie's international policy, it took shape

in his profound conviction that war was made mainly for profits and dividends, and that Labour's best weapon against it was the general strike. He proposed a resolution to this effect at the International Socialist Congress of 1910; and it is enough to say that his direct and simple mind moved, as it often did, in the way in which the practical thought of his generation has followed him. It has always seemed to me that, failing an automatic system of referring imminent war to a process of delay and conciliation, the general strike, a bad weapon for industrial use, had its proper place in the workmen's armoury as a final weapon against a war suddenly presented to Parliament by their executives and declared to be an "inevitable" consequence of the failure of undisclosed negotiations. "I suppose we shall be allowed to say a word or two before war begins?" said Hardie at the Albanian-Montenegrin crisis of 1912, looking with prophetic irony to the event which declared itself sixteen months later. He went into Parliament, says Mr. Stewart, to avert the Russian issue of a Socialist leap to power on the back of a world-war—in other words, of that "direct transition" to Communism which Lenin now exposes as the capital error of Bolshevik strategy. But Hardie was scarcely an active, or perhaps a convinced Parliamentarian, for the deeper ground of his belief lay in an appeal to the conscience of the organized work-people. When that seemed to fail him in the autumn of 1914, he felt that all was over. At all events, the grave, received this single-minded man within a few months of the hour when the spirit, and most of the machinery of European Socialism as he knew it, had turned to dust.

Preservation of Fruit Juices.

The methods for preserving fruit juices in their natural state depend upon the particular juice that is to be used. Sterilisation is probably employed to a greater extent than any other method, although refrigeration, saturation with carbon dioxide, and treatment with sulphur dioxide and sodium benzoate are occasionally resorted to. The juices of red currants, black-berries, raspberries, cherries, peaches, and grapes may be successfully prepared on the larger scale and preserved by sterilisation without material injury to their colour or flavour, says the "American Druggist" (October, 1921). A general outline of the process used in manufacture of grape juice will serve as a type. The fruit is either placed directly in the press or cooked previously to obtain a greater yield of juice. The juice is then run directly into the bottles and capped. The bottled juice is now sterilised by immersing the bottles in water and rapidly bringing the temperature to 80° C. (176°F.), allowing a period of one hour from the time of immersion. If the fruit has been expressed while hot and the juice immediately run into the containers, the time may be shortened to forty minutes for sterilisation. Juices affected by heat may be preserved to some extent by means of sodium benzoate. They are heated to 65° C., filtered, if necessary, through kieselguhr, the requisite amount of sodium benzoate added to the filtrate immediately, and the juice placed in containers which have previously been steam sterilised. The stoppers, corks in particular, should be sterilised by steam under pressure. One-tenth of one per cent. of sodium benzoate is sufficient as a preser-

vative and should not be exceeded. The employment of sulphur dioxide is not to be recommended, although it is used—50 to 100 parts per million of juice being the usual quantity.

According to a paper read by Mr. A. T. Longley, at the annual meeting of the Hawaiian Pine-apple Packers' Association, experiments have been shown that the use of mulching paper materially increases pine-apple production per acre. The idea of a paper mulch for sugar-cane was patented some years ago but no experiments with pine-apples were conducted until 1919. It is estimated (says the N. S. W. "Agricultural Gazette") that there are now 461 acres planted in paper, of which 68 acres will fruit in 1922. The paper mulch appears to consist of a strip of paper in which are cut holes large enough for the pine apple plants to grow through. The first yields from the method were obtained last year, and according to Mr. Longley it was found that the plants in paper grew uniformly larger, greener, and more healthy, and the fruit larger (equal to a little over 30 tons per acre) and better conditioned. The paper mulch prevents the growth of weeds and the packing of the soil under heavy rains, thus greatly reducing the cost of intercultivation. In an experiment at the Hawaiian Pine-apple Association's experiments station, the plant growth on paper mulch was three times greater in weight and much healthier than on other plots.



Books in Brief.

SHORT REVIEWS OF RECENT BOOKS.



Secondary Education in the XIX Century.

By R. L. Archer, Professor of Education in the University of North Wales, Bangor. Published by the Cambridge University Press. Price 12s. net.

This is a brilliantly written book,—critical, suggestive and descriptive at times. Mr. Archer's piercing logic is seen to advantage when he is handling a great work or writer. For instance, his searching examination of Herbert Spencer is of unique interest. Why is it that Spencer's articles on Education has earned a fame second only to that of Milton's "Tractate." The answer to this question will be found in Mr. Archer's book under review. Mr. Archer writes as an Educationist and in the main to educationists. And if at times he is a little too severe as a critic, the seeming harshness should be set down to the keenness with which he appreciates his position and urges it on the reader. The love of his subject is great and that is sufficient excuse, in our opinion, to any one who objects to the critical spirit he displays. Apart from this, Mr. Archer's book has a charm that is inseparable from the point of view he adopts in discussing educational development. The book is a contribution to the subject of "Secondary Education" and is, in our opinion, rightly included in "Contributions to the History of Education." The present state of Secondary Education—rather of all Education—in this country is such that a clear grasp of its history in England cannot but prove of the greatest value to all those interested in Education in this country. We heartily commend Mr. Archer's book to the notice of Universities and publicists in India. A more stimulating book in the field of education it has not fallen to our lot to read and enjoy.

Common-Sense Economics.

By L. Le Mesurier published by John Murray, Albemarle Street, London, W. Price 6s. net.

This is a practical elementary book intended for schools and general readers. Its object is to train "responsible citizens in a Democratic State". Mr. Le Mesurier has aimed at making his book not only intelligible, and readable, but also has made it more easily assimilable by treating the subject from a thoroughly sympathetic point of view. Mr. Le Mesurier has imparted a human interest to the elucidation of a subject which he apparently deeply loves. Sir Lynden Macassey writes an appreciative introduction to the book in which he states that there is "a definite need for a book of this kind". Those who know Sir Lynden's war work know the opportunities he has had for observing the general ignorance of the masses in regard to matters relating to economic topics—wages, capital, etc., etc. It is impossible not to praise the attempt made by Mr. Le Mesurier in this book. He has treated a dry and difficult subject in a thoroughly sympathetic manner. To a beginner or to a lay reader a better book cannot be recommended.

An Experiment in Synthetic Education.

By Emily C. Wilson. Published by Messrs. George Allen and Unwin, Ltd., Ruskin House, 40, Museum Street, London, W. C. Price 4s. 6d. net.

The author of this remarkable little book deserves to be complimented on the book she has produced. It is devoted to the elucidation of work accomplished in an English School by a staff of enthusiastic teachers in close collaboration. The kernel of the system described is thus described by the author:—

"Looking back over these notes it will, I hope, be apparent that we have been calling into play and encouraging the growth in the children's minds of three fundamentally important qualities: Imagination, Criticism and Self-Expression.

The difference between related and unrelated knowledge is that while the latter, retained only by an effort of memory, is unproductive and lifeless, of no value save to satisfy an examiner, the former is assimilated through the imagination, and becomes a living and productive part of oneself. Being trained to see things, as it were stereoscopically, in their right perspective and relief, means acquiring that habit of using the imagination whereby school life,—yes, and grown up life too—becomes not a time of drudgery and toil but a journey of adventure, wonder and romance.

And very closely allied to the imaginative faculty is the second quality of critical judgment. Imagination may co-exist with faculty judgment, but criticism cannot be sound unless sympathetic, nor sympathetic without imagination. Clear and comprehensive vision is the first essential of a true valuation. A child no sooner perceives that the art and language, science and geography, nay even the dress and detail of a period belonging together, than he must needs correlate the phenomena of his present existence—and is it not only by correlating, that is comparing, things that he judges of them at all? When he sees that science and theology are not things apart, but touch and comingle, act and react upon each other and together change and develop, only then can he begin to think clearly about them both. When he sees, so vividly that he can enter into, the struggle between plebeian and patrician, he instinctively weighs the rights and wrongs of the conflict, and finds himself standing on one side or the other, or better still, engaged in an attempt to devise as fair deal as between the two. When he sees the voyage of Columbus in its complete historical setting, as a great personal conflict and as a cosmic adventure, his mind contrasts the values of, on the one hand, the purely negative conservatism that has eyes but sees not, ears but hears not, and on the other of the faith that sees the unseen, and goes out to worlds as yet unknown that their reality may be proven.

It is impossible to over-emphasise the value of judgment so trained, a judgment that has seen the systems and opinions of the past at their best, that is, when they were actually and justifiably believed,

and had enough of beauty and glory in them to inspire the loyalty and devotion of our fore-runners; a judgment that in building the future can reverence the past, and wherein no harsh or narrow iconoclasm can find a place.

About the third quality I have mentioned, Self-Expression, or creative effort, little more need be said. To a great extent it springs naturally from the other two—the powers of imagination and criticism; and it cannot fail to be fostered by the atmosphere of happy and spontaneous mental activity which we think that our minds help to produce."

The detailed chart of a five years' course which is appended to the book will, we have no doubt, prove useful to teachers in following the method described by the author.

Dawn of Modern Finance in India.

By V. G. Kale, Professor, Ferguson College, Poona. Published by the Aryabhushan Press, Poona. Price Rs. 2-0-0.

We have read this book with great interest. Originally delivered as a course of Lectures before the Benares Hindu University, it has been re-cast for use for larger circle of readers. The chief merit of the volume is its suggestive brevity. Mr. Kale has a thorough grasp of his subject but writing as he does for the student and the layman, he does not presume much knowledge on the part of either. This is as it should be. We think that Mr. Kale should carry out his purpose of writing a history of Indian finance; he has both knowledge and sympathy for such a task. This book gives a fore-taste of what he could do, if he applied himself to the task. The book covers matters of great moment to the well-being of this country and we would like to see it widely appreciated.

The Romance of Building.

By A. S. Walker. Published by George Philip & Son, Ltd. Price 3s. 6d. net.

This is a volume in the "New Era Library" of Messrs. Philip & Son. After reading through the book, we marvel at its cheapness for the information it contains; its illustrations add to its value. Mr. Walker writes for the lay reader and not for the specialist. The book, therefore, ought to prove an excellent medium for acquiring an intelligent grasp of the romance relating to building. We have no doubt that the book and the series of which it forms one will attract the attention they so richly deserve.

The Cultural Unity of India.

By J. H. Cousins. Published by the Theosophical Publishing House, Adyar, Madras. Price Rs. 2.

We have before this written appreciatively of Mr. Cousins' literary efforts and now have the pleasure of introducing to our readers his latest book which bears a title which speaks for itself. An Irishman of catholic tastes and keen literary judgment, he has seen India and Japan with the eye of the acute observer. The result of his peeps into Asia is herein given to the reader. "Asia is one", quotes Mr. Cousins from a Japanese Scholar and Artist in commencing his book. That is true but how many realize it? The purpose of this book is to make that statement something of a reality. The eight chapters of this book could be read in a couple of hours—so well are they written. The presentment of facts is impressive to a degree, much of the book being written from first-hand observation. This is the

first time that a book of this kind has been attempted and we should be pleased to see that the Publishers are called upon to issue many editions of it to satisfy the demand for it. A book to read and to keep such as this ought to go very far indeed.

The Philosophy of Citizenship.

By E. M. White, Lecturer in Civics, London County Council. Published by George Allen & Unwin Ltd., London.

We do not think we have come across a book better suited for adults in the domain of Civics. The author of this comprehensive book treats the subjects in five main chapters dealing with: (1) What is civilization? (2) The content of Civics; (3) The Fundamentals of Citizenship; (4) Social Ideas; and (5) Spheres of Reorganization. The keynote of the book may be discerned in the following sentences which are to be found in the Introductory Chapter:—"No student of Civics in its full sense can separate any one aspect of life or civilization from the others. He may be interested in parish Councils or Municipal trading or local history or imperial federation; and that is well, so long as he remembers that his interest lies in a small part of a great whole wherein all parts overlap and mingle." Again, we read:—"The aim of Civics is not only to give knowledge of the institutions of society and their growth, but also to inspire an active devotion to the Community." An excellent book written by one who knows the subject and appreciates its worth.

The Perfumery and Essential Oil Record Year Book and Diary for 1922.

Published by Messrs. J. Steel & Co., Ltd., 8, Serle Street, Lincoln's Inn, London, W. C. 2.

Mr. Archibald C. Merrin, the Editor of the *Perfumery and Essential Oil Record* deserves once again to be complimented on the excellent and informing Year Book and Diary he has issued. It is as usual full of useful information. The *Diary* part is in the same customary fashion—interleaved with blotting of the Asoka brand. The contents include a review of the work on essential works in 1921 from which we take the following relating to "Sandalwood oil," which speaks for itself:—"The oil obtained from the West Australian sandalwood has been stated to contain 75 to 80 p. c. of Santalol. An investigation at the Imperial Institute showed that this oil differs in odour, composition and optical rotation from the Indian oil and that even by fractionation an oil answering the requirements of the British Pharmacopœia could not be obtained. Moreover it is necessary to prove that its therapeutic action is similar to that of the true Indian sandalwood oil." Among other items of interest we note "Yields of Essential Oils," "Constants for Normal Essential oils," "Constituents of Essential oils and Artificial Products" and a description of a visit to Holland in which an account of the factories of Polak and Schwarz Ltd., of Zaandam Hilversum is given. By the way, we may note that this factory is represented in London by Mr. R. B. Mavlinkar. Altogether, the "Year Book and Diary" keeps up the excellent reputation it has built up for itself.

Some Aspects of Dairying at Madras Agricultural College, Coimbatore.

By D. Ananda Rao, B.Sc., Ag. Professor of Agriculture, Coimbatore, Superintendent, Government Press, Madras. Price Re. 1.

This is a bulletin that deserves wide circulation. Written by a specialist, it is full of stimulating information. To any one interested in the Dairy business a better publication cannot be commended. The whole subject is treated with such care and knowledge that the man in search of information cannot but feel thankful for the manner in which it has been set out for him. It will enable readers to know its value if we mention that the four important chapters of the book deal with (1) Dairy Farm, (2) The Dairy Herd, (3) Creamery and (4) Business. In four other chapters, put in as Appendices, the author has treated of (1) The daily variation in the composition of milk (2) Dairy Industry around Coimbatore (3) Influence of different fodders on the quantity and quality of milk, and (4) Economics of the Ghee Trade. Those interested in Dairying cannot do worse than invest a Rupee on this book and study it carefully. It is full of interesting and valuable information and being fully illustrated, it ought to be doubly useful to those for whom it is primarily intended.

MISCELLANEOUS PUBLICATIONS.

Development of Indian Sugar Industry.

By S. Das, B.A. (California)

A booklet of useful information. Mr. Das urges the case for Cane Sugar production with facts and figures. His note on "Possible lines of Development in India," included in this brochure will repay perusal.

Character-Building.

By E. Wood. Published by the T. P. H., Adyar, Madras.

This is an eminently practical book which ought to be in the hands of young men. Even adults can profit from it if they but followed what is contained in it. Mr. Wood has brought much pains to bear on his book. His satisfaction would be very real if an increased number of people studied and profited by it.

Elementary Chemical Calculations.

By K. N. Kini, B.A. (Hons.) B. B. D. Power Press, Bangalore. Price Re. 1.

A book of carefully selected problems in Elementary Chemistry with a few typical ones worked out. Students for the local S. S. L. C. and Entrance, Intermediate and First Year B. A. (Mysore) ought to find it useful.

Speedograph.

By G. C. L. Naranayya, Principal, Commercial High School, Bangalore. Published by Messrs. Higginbothams Ltd., Bangalore.

This is claimed by the author as "an original system" for writing shorthand which "is so simple that it can be easily learnt in a few hours." Those who cannot spare the time for learning so scientific a system as Pitman's have here a chance of learning a system of shorthand for which so much is claimed by the author. The system as explained is a simple one, but it will require constant writing to dictation to familiarize oneself with it. It is a common sense system like many others which preceded Pitman's and shows that Pitman's though the most scientific and has the largest following in the world, has still to count some adversaries to its universality.

Indian Lac, Turpentine and Rosin.

A new volume in the series of Reports of the Indian Trade Enquiry conducted at the Imperial Institute has just been published by Mr. John Murray. This contains the reports on lac, turpentine, and rosin made by the Special Committee on Gums, Rosins and Essential Oils, of which Sir Harvey Adamson, K.C.S.I., was Chairman. About 94 per cent of the world's supplies of lac (shellac, etc.) comes from India, the rest from Indo-China and Siam. Although India thus has a practical monopoly of the trade, the state of the industry in India is not altogether satisfactory. The Special Committee make various recommendations for improving the present conditions of the industry, for placing the manufacture on a thoroughly efficient basis, and safeguarding the interests of India and the Empire. Although India possesses large areas of pine forests from which turpentine and rosin could be obtained, the country has not hitherto figured among the large producers of these materials, and is still dependent to some extent on foreign countries for its own requirements. The Special Committee consider that every effort should be made to increase the Indian output and recommendations are made with this end in view. The last section of the publication gives interesting particulars relating to the production of turpentine oil and rosin in India and the characters of the products obtained from the different Indian pines.

Indian Legislative Economics or Town *versus* Country.

By E. L. Price, B.A., (oxon), Bar-at-Law, O.B.E., M.L.A.

This contains selections from the official reports of certain debates on economic subjects in the Council of State and the Indian Legislative Assembly during their first sessions at Delhi, 1921, with a brief preface and a few notes by the author.

Cost of Living in Madras.

Statistics prepared for the Madras Publicity Bureau with regard to prices in Madras in February shows an increase in the cost of living over that in July 1914 of 70.3 per cent, and in the cost of food alone of 63.7 per cent. The figures for preceding months are as follows:—

Month	Cost of living	Food only
January 1922	71 per cent	63 per cent above July 1914
December 1921	74	68
November 1921	76	70
September 1921	79	
August 1921	75	

The United States Government has appointed two Vice- Consuls at Prague.

The returns of the Prussian harvest for 1921 show the number of hectares under wheat in that year was 784 496, an increase of 25,203 on the previous year. The number of hectares under rye was 3,097,881, a decrease of 19,256 (hectare=about 2½ acres). The wheat harvested in 1921 was 1,692,000 tons, an increase on the harvest of 1920 of 393,000. The rye harvested in 1921 was 4,949,000 tons, an increase of 1,459,000.

Mysore Economic Development Board.

Progress Reports.

The following is a summary of the proceedings of the meeting of the Board held on the 19th December 1921.

The sixth meeting of the Board was held on Monday the 19th December 1921. In the unavoidable absence of the President, the Senior Vice-President, and First Member of Council, Mr. A. R. Banerji, I.C.S., presided over the deliberations. The Vice-President and all the members with the exception of the Chief Engineer and the Director of Geology, were present.

The statements, copies of which had been circulated beforehand, were taken as read and recorded.

To a question from Mr. M. Subbiah as to whether Government were themselves taking up the development of the lac industry or expected private enterprise to take it up, the President observed that the scheme was being considered by a Special Joint Committee of the Industries and Commerce Board, and the Board of Scientific Advice.

Mr. K. P. Puttanna Chetty remarked that the Central Boards were no doubt working on right lines but he felt that the results achieved were rather poor.

Mr. T. Narasinga Rao said that immediately after the retirement of Sir M. Visvesvaraya a reference was made by the First Member of Council then officiating Dewan at one of the Standing Committee meetings to the necessity on the part of the members for redoubling their efforts and for taking a careful stock of their position with a view to consolidate past work and build future work on a firm and solid foundation for the lasting credit and good name of this Conference. Though this statement was made three years ago he was sorry to observe that they were going back to the old state of affairs probably on account of financial stringency. It was of the utmost importance that they should have some sort of agency for propagandist work in the districts. Unless they did so, the work done during the past ten years would be lost.

The President observed that a sort of feeling was always expressed that economic work did not receive attention in the districts. So far as he was aware the two complaints urged were

- (1) inadequate funds; and
- (2) withdrawal of district officers intended for economic work.

If members would kindly consider the position once for all and make concrete suggestions, Government would not only note them for consideration, but also carry them as far as possible.

Mr. Barton said that as observed by him at the last meeting it was very necessary that the Central Boards should meet oftener if any tangible work was expected of them. Mr. Forbes said that in addition to the Board's meeting oftener they should hold a joint session for an hour or so every time they met and afterwards hold separate meetings of the several Boards.

The Third Member of Council observed that as according to the orders on the Education Memorandum the District Boards had to surrender the Local

Funds General and other cesses, the financial condition of the District Boards required careful examination. Very few District Boards had supplemented from their funds the Government grant of Rs. 3,158 for Economic Conference work. When they could not make adequate provision for economic work they would naturally be unable to take any decisive action.

Mr. K. P. Puttanna Chetty said that the point under consideration was not solely one of funds. There was a complaint that the District Boards were not taking interest in economic work. The point for consideration was, what should be done to place the working of these bodies on a proper footing? To consider this he was of opinion that there should be a Committee consisting of representatives from each District Board.

Mr. S. Venkatesaiya said that the expenditure for economic work might first be met from the Government grant and afterwards from the general funds of the District Boards. If this option was given to them they might be able to find funds. There was no doubt a certain willingness on the part of the District Boards to undertake the work but their finances were in a very unsatisfactory condition. The Boards at present were going on without a sanctioned budget and he was afraid that they would have to abandon 50 per cent of the work for want of funds. Some prompt action was therefore necessary. In addition to finance, the lines of work and in what cases it should be uniform and where diversity is justifiable should also be settled. These were things which should be discussed by a Committee.

The Third Member of Council observed that he was surprised to see that some of the District Boards had proposed to utilize Rs. 2,000 for establishment charges out of the Government grant of Rs. 3,158. To have a costly establishment to do work to the extent of Rs. 1,000 was to say the least scarcely justifiable. All these things should be looked into. So far as work in the Districts was concerned they were never spoken of well either in this assembly or in other assemblies. Formerly a large number of new schools used to be started by the District Boards. So far as other activities were concerned he did not think any definite results had been achieved. He did not know much about the working of the other Central Boards. But so far as the Education Board was concerned after the issue of Government orders on the Education Memorandum they were not able to give the District Boards any work. He was of opinion that until the finances of the District Boards were placed on a proper footing they would not be able to do much work.

Mr. Krishna Sastry said that unless they had some agency for work in the Districts and the policy as well as the responsibility of the District Boards were fixed they could not expect any progress.

The Inspector-General of Education said that they could not expect the District Boards to take up any original work and that they could only consider

concrete proposals sent up to them by the Central Boards and the Department with a view to see how far local conditions affected the particular proposals and he was of opinion that this aspect of the question had not yet been considered by the Central Boards. After all the question of agency was a subsidiary matter as the real work, *viz.*, working out of schemes rested with the District Board as a whole and not with any individual officer. As for funds he was of opinion that they should be obtained by enlisting private enterprise by the use of personal influence and carrying on propaganda work. He was of opinion that more importance should be attached by the Central Boards to formulate suitable schemes suited to local conditions for the consideration of District Boards.

The Director of Industries said that according to the Local Boards Regulation economic work was made obligatory on the District Boards and they should therefore set apart some funds for the purpose as Government can only help them to a limited extent. The work did not require much staff and what was required was the disposition on the part of the District Boards to regard economic development work as an obligatory and important item of work on their programme.

Mr. R. Gopalaswami Iyer suggested that two things might perhaps enable the District Boards to do more work, *viz.*, to make the members attend meetings regularly and making it obligatory on the official members such as the District Inspector of Education to place before the District Boards the periodical reports of work done.

Mr. M. Subbiah said that even when there were full time officers very little work was done in the districts as regards agriculture and industries and commerce. The only work done was the opening of schools without knowing whether Government could afford to continue to maintain them or not. He was of opinion that now the whole attention of the District Boards might usefully be devoted to getting endowments for educational purposes. If this work was done strenuously by them for the next two or three years it would greatly help the education of the masses. As regards other branches of activity he believed that very little could be done by persons who were not experts.

Mr. G. Devoji Rao said that the two main reasons for the meagre work turned out by the District Boards was paucity of funds and the want of proper men to undertake the work.

The President said that from the minutes of proceedings of the last meeting he observed that the same subject was discussed and the trend of discussion was for the appointment of a sub-committee of the Board though no reference was made to it in the final resolution. They might now take it that the general sense of the meeting is that a Committee of the Economic Development Board with representatives of the District Boards should be constituted with a view to examine how far the present organization of the Economic Conference which was introduced with effect from the 1st January 1920 had been successful and whether any modification was necessary. He thought there was some misapprehension in the minds of some members with reference to the question of finance and establishments of the District Boards. If they referred to the Budget estimates of the Economic Conference for the years previous to the reorganization members would see that Government made very little grants to the District Committees either for investigation or for carrying out schemes. For

example, out of a total sum of Rs. 1,74,000 for the year 1917-18, only a sum of Rs. 6,000 was set apart for all the districts for experiments and schemes, the rest being spent on establishment charges and travelling allowances. The question for consideration now resolved itself into whether they were formerly getting from the District Committees more work than they were getting at the present moment under the new scheme. He was afraid that members were taking a very pessimistic view in taking stock of the work done by the Conference. The cry before the reorganization was that they had too much establishment whereas they were now told there was no agency at all for work in the districts. He, for his own part, was inclined to think that work in the districts depended largely on the enthusiasm and personal influence of the members. There was also another misapprehension, *viz.*, that the Government order expected the District Boards to do the whole work of the Economic Conference. As pertinently observed by Mr. Balasundaram Iyer, the District Boards were only expected to help the Central Boards and the Departments concerned in carrying out small investigations and in the collection and spreading of information. It is now two years since the new organization was brought into force and there was no objection to an investigation of the kind proposed by Mr. Puttanna Chetty being made. If it was the unanimous opinion that some change was necessary a committee consisting of representatives of the District Boards in which the Central Boards would also be represented might be appointed to consider the several aspects of the question.

Mr. Puttanna Chetty said that since two years had elapsed after the reorganization it was time to see whether the arrangement was working satisfactorily or any change was necessary in the constitution and working of the District as well as the Central Boards. A large representative committee under the presidency of one of the Chairmen of the Central Boards might perhaps consider the question.

Mr. S. G. Forbes again observed that a combined session of all the Central Boards for an hour or so before the separate sessions was the only change that was necessary in the existing arrangements.

Mr. K. R. Srinivasa Iyengar said that there was a general feeling that the District Boards were not doing satisfactory work. He thought there was some justification for that feeling but the District Boards could not be blamed for it. He himself had no clear idea of what the District Boards had to do. The Committee to be appointed should therefore define clearly the functions of the several agencies.

At this stage the following proposition was moved by Mr. Puttanna Chetty and carried *nem con.*

"That a Committee of the Economic Development Board consisting of members drawn from this Board, the Central and District Boards and Heads of the Development Departments should be appointed to examine the work of the Economic Development Board, the Central Boards and the District Boards and suggest the best manner in which their work must be co-ordinated and their mutual relations defined."

CATTLE SHOWS AND FAIRS IN THE STATE.

Mr. M. Subbiah said that Rules 5, 6, 7, 8 and 9 would work as a great hardship on poor raiyats, especially Rule 5 according to which no cattle was to be allowed to enter the show grounds without being examined by a veterinary officer and stamped with red paint. The Chairman, Board of Agriculture, observed that the rules were carefully examined by a

sub-committee consisting of a large number of non-official gentlemen and were generally approved by the Board after an animated discussion.

The Director of Agriculture said that most of the contagious diseases started in the month of January when the *Jatras* were generally held and it was very necessary to provide some safeguards and that the scheme might be tried in some of the important *Jatras*. As regards hardships to raiyats at the hands of petty officers there would be on the spot an officer of the status of an Assistant Commissioner as also a senior officer of the Veterinary Department and irregularities, if any, might be brought to their notice.

Mr. Puttanna Chetty said that the rules should, in the first instance, be considered by the District Boards who were more competent to pronounce an opinion as to whether they were workable or not.

The Chairman, Board of Agriculture, said that the subject was first considered by a Sub-Committee consisting of experts, afterwards by the Agricultural Board and was finally placed before the Economic Development Board as it was the idea of the Board that the Rules should be perfected before sending them to the District Boards.

Mr. S. Venkatesaiya said that as a number of fairs were brought into existence through the enthusiasm and enterprise of private persons it was desirable to make the rules as simple as possible.

As the general sense of the meeting was in favour of the subject being brought up for discussion after consulting the District Boards it was resolved that the Rules might be referred to the District Boards for opinion and again brought up at a subsequent meeting of the Development Board.

Mr. M. Subbiah suggested that the rate of interest to be paid by Government on endowments might be raised to 7 per cent and the quota of contribution from the public towards equipment charges might also be waived by Government, the school being in every way treated like a Government institution. He was confident that if this concession was promised by Government, endowments would flow in freely.

Mr. Gopalaswami Iyer suggested that instead of having a separate fund for every village a common fund might be organized for the taluk as a whole the same being administered by a Representative Committee at Taluk headquarters. The Inspector-General of Education and other members remarked that the suggestion was not a practical one as it was impossible to induce villagers to make contributions to a general fund.

After some further discussion the recommendations of the Board of Education were generally approved.

DEVELOPMENT OF THE CENTRAL INDUSTRIAL WORK-SHOP.

The Director of Industries in leading the discussion briefly explained the causes for the institution having worked at a loss. Though the workshop could not earn much profit it was still possible to work it on commercial lines if it concentrated attention on repairs and the manufacture of simple machinery for which there was sufficient demand and all the Government Departments co-operated in getting their requirements from the workshop.

Mr. Puttanna Chetty said that private people were complaining that Government was a very powerful competitor and Government officers invariably sent all their works to the Government workshop. He was therefore of opinion that the Industrial Workshop should undertake only such private jobs as could not be executed by private workshops.

The Chief Electrical Engineer said that he always opposed the commercialization of the Central Industrial Workshop as it was chiefly intended for Government work and what suited Government needs was not likely to suit the requirements of the public. He was of opinion that private jobs should only be undertaken when there was not sufficient work to keep the hands busy and that his personal experience of the Workshop was that it charged more than private workshops for the same kind and quality of work. If the workshop did not undertake work like the manufacture of levelling instruments and pumps for which there was not much demand and the account rules in the matter of purchase of raw material and fixing of prices at the prevalent market rates were also suitably modified there was no reason why the workshop should work at a loss instead of making some profit.

Mr. B. K. Garudachar also urged that special rules should be framed by the Financial Department as regards the workshop and other commercial concerns managed by Government. As regards the utility of the workshop he thought there could be no difference of opinion and it was desirable to authorize the institution to undertake private jobs and render help to persons who had installed machinery for another two or three years till the private workshops showed signs of stability. Messrs. Subbiah and Gopalaswami Iyer also urged that it was desirable to continue the workshop on the existing lines as it was the training ground for local workmen and there were no competent private firms locally as in Madras and Calcutta.

Mr. Barton said that he was totally against the workshop undertaking private work especially when they were informed that it was possible to get things made cheaper in private workshops than at the Government workshops.

The general sense of the meeting was in favour of continuing the institution on the existing lines for another 2 or 3 years with the necessary safeguards in the matter of purchase of raw materials, costing methods, etc., which would enable the institution to be run on self-supporting lines.

FUTURE POLICY OF THE INDUSTRIES DEPARTMENT.

The President observed that the subject might be discussed generally as the scheme regarding the reorganization of the Department which was hitherto on a temporary footing was before Government.

Messrs. Subbiah and Garudachar said that the Department was overmanned and there was no necessity for a separate Commercial Section, the whole Department being managed by the Director with the help of an Assistant. Mr. Garudachar further observed that the compilation of the rail-borne statistics might with advantage be entrusted to the Chamber of Commerce with a suitable grant for the purpose.

In reply to an enquiry from the President as regards the employment of experts in the Department Mr. Puttanna Chetty said that the officers should only be appointed for stated periods so that they may always have men with up-to-date information while Mr. Subbiah said that all the officers of the Industries and Commerce Department should be on a temporary footing. Mr. Krishna Sastry added that the efficient training of a certain number of local men should be made an invariable condition while engaging experts.

Mr. Barton observed that the Department should

concentrate its attention on only one or two important industries and get first class men as experts.

Mr. T. Narasinga Rao said that experts should be appointed for only two or three years in the first instance and their services may thereafter be continued in case they turned out good work.

To a remark made by the Director of Industries that experts may be employed permanently in the case of industries like the textile industry, Mr. S. Venkatesaiya observed that it was not desirable that any industry should receive State nursing for all time.

As regards work in the districts the Director of Industries said that with the exception of about 25 all the other installations put up by the Department were in working order and that these installations were being supervised by the Superintendents of Industries who were all qualified men. These officers in addition investigated new schemes and gave technical advice and assistance. Mr. Puttanna Chetty enquired what action was taken about his request sometime ago about undertaking a survey of the present condition and working of the installations put up by the Department. The Director said that the information was ready and would be placed before the members at the next meeting.

Messrs. Subbiah and Krishna Sastry said that instead of having Superintendents in the districts it would be more efficient and economical to attach one or two highly qualified men to the Central office and have only mechanics in District Headquarters.

As regards starting of new industries Mr. Subbiah said that Government might give necessary help to private enterprise and it was not desirable for Government to pioneer them.

MINOR AND COTTAGE INDUSTRIES IN THE DISTRICTS.

The Director of Industries said that the Weaving Industry had made very good progress and that the Department had obtained the first prize for a complete set of weaving appliances at the recent exhibition held at Patna by the Government of Bihar and Orissa and there was still great scope for developing the industry. He further observed that for the development of minor industries it was very necessary to revise the Home Industries Institute though not on such an extensive scale as in the past, the idea being to make the scheme self-supporting except perhaps the cost on the expert employed. For the development of rural industries such as mat-making it was essential to improve marketing facilities by having sale depots in important towns like Bombay as was being done by other Governments. If this was done he had no doubt that the Arts and Crafts Depot could also be made self-supporting.

Messrs. Puttanna Chetty and Gopalaswami Iyer also supported the Director and said that it was desirable to revive the Home Industries Institute.

Messrs. Subbiah, Krishna Sastry and Narasinga Rao urged that a stimulus might be given to the weaving industry by introducing an improved kind of *charkas* as it would afford subsidiary occupations to people who had spare time like Gosha ladies. The Director of Industries and the Inspector-General of Education said that *charka* might perhaps be advantageously used in connection with kambli manufacture but for spinning cotton it was quite out of date and it could not possibly compete with mill made yarn.

INDUSTRIAL AND AGRICULTURAL CO-OPERATION.

As the members had not sufficient time to go through the note circulated by the Registrar of Co-operative Societies, the subject was deferred for consideration at the next meeting.

Mr. R. Gopalaswami Iyer urged that the education of defectives was a very important matter and that the subject should receive the early attention of the Board of Education. The Chairman, Board of Education, said that the subject was receiving the attention of the Board.

The President after consulting the members announced that the next meeting of the Board would be held on the 18th March so that the recommendations of the Sub-Committee appointed to examine the working of the Economic Conference organization might be considered by the Board before bringing them up for discussion at the next session of the Economic Conference.

S. HIRIYANNAIYA,

Secretary, Economic Development Board.

Progress in Travancore.

The following are extracts from the address of Dewan Bahadur T. Raghaviah, Dewan of Travancore, delivered to the Sri Mulam Popular Assembly which opened its XVIII Session at Trivandrum on 27th February last :—

ECONOMIC DEVELOPMENT BOARD.

Last year I pointed out that one of the regrettable features of the administration of the State was the utter lack of co-ordination and correlation among the several Development Departments. With a view to remedy this defect, an Economic Development Board was created towards the close of 1996. This Board which is composed of 20 members, of whom only seven are officials and on which all the main Development Departments and the various material interests of the country such as agriculture, industries, commerce and banking are represented, has been organized with the object of co-ordinating the work of the Development Departments and of securing the benefit of expert knowledge and practical experience in matters affecting the economic well-being of the people. Government are glad to note that the lines of work laid down by the Board for its own guidance are sound and that its salutary influence has already begun to be felt by every Development Department.

AGRICULTURE AND FISHERIES.

The progress of the Department of Agriculture and Fisheries has continued unabated. The grant for this department which stood at Rs. 0.95 lakhs in 1094 has been raised to Rs. 2.015 lakhs during 1097. Seven Travancoreans have been deputed for agricultural training at Pusa and Nagpur, and two officers of the department, *viz.*, Agricultural Chemist and the Mycologist, have been granted study leave with allowances to proceed to Europe for higher technical studies. Arrangements have been completed for opening an Agricultural Middle School at Alwaye in Edavam next. The analysis of soils and the experiments on agricultural methods and manures and combating plant pests are proceeding apace. The popularity of the manures introduced by the department has so far increased that manures to the value of about Rs. 50,000 found a sale from the Government Depots in 1096. Arrangements have been made for the expansion of these sales by the appointment of commission agents, the expenditure on account of their commission being borne by the Government.

Demonstration of the motor tractor should have convinced the punja ryots of the feasibility of giving a timely ploughing to their fields before inundation so as to render them fit for annual cultivation. As a result of the experiments carried out by the Department, it is reported that 3,000 acres of punja land in Kuttanad have been already brought under annual cultivation and Government have no doubt that the motor tractor demonstrations conducted by the department would afford a further stimulus to this profitable innovation. The value of green manure to ryots has been recognized by exempting green manure trees leased on kuthagapattam from payment of rent to Government and the Director of Agriculture has been asked to open a green manure seed depot in South Travancore. Steady efforts are being put forth to popularize scientific fish curing and the manufacture of fish oil and fish guano, and four fish-curing yards have been newly opened. It is in contemplation to send a good mechanic shortly to Chaillyam in Malabar to study the fish canning industry with a view to its introduction in Travancore. The law relating to the protection of fish against indiscriminate and wanton destruction has been placed on a sounder basis by the passing of Regulation XI of 1097.

INDUSTRIES.

Dr. Barker, the head of the Department of Industries having proceeded on leave preparatory to retirement in April last, the working of that Department was entrusted to Mr. Chakko, the State Geologist, in addition to his own duties. Last year, I characterized the policy pursued by Dr. Barker as one of drift. Since his departure, the work of the Department has been mainly directed towards the rejection of what was not good in the old arrangements. The preliminaries for the floatation of the company with a capital of 12 lakhs of rupees for the manufacture of sugar from palmyra jaggery in South Travancore in the shares and direction of which Government have resolved to substantially participate, have been settled, and a formal agreement in the matter will shortly be entered into. The control of industrial and technical education has been assumed by the department, and the usefulness of the technical schools at Nagercoil and Trivandram has been greatly enhanced. A weaving instructor has been doing peripatetic propaganda work among cottage weavers during the past nine months, and his work has been so much appreciated by the public as to call for a demand for more instructors of his type. The Oil Assistant of the department is also touring about the country, demonstrating the superiority of the lemon grass oil manufactured with improved stills. The Chemistry staff of His Highness the Maharaja's College and the Chemical staff of the Department of Industries have been working in collaboration in the matter of oil research, and arrangements have been made for the construction of an *annexe* to the College Laboratory, where both the staffs may carry on conjoint investigations in the field of industrial chemistry. The old Carpentry School at Quilon, the working of which was extremely unsatisfactory, is undergoing radical transformation. A School of Commerce was opened at Alleppey, the chief commercial centre of the State, in Kanni last, for imparting instruction in commercial correspondence, book-keeping, accountancy, and kindred subjects, and it promises to develop into a really useful and popular institution. Competent non-official visitors' boards have been attached to this as well as the Nagercoil Technical Institute. The chief defect of the department has so far been the lack of experts. This

defect, however, will, in some measure, disappear on the return of the Government industrial scholars from Europe. One of them Mr. C. Kumara Das, B.A., M.Sc., who has specialized in the manufacture of soaps and oils, has just returned, while the arrival of Mr. A. K. George, B.A., the tanning expert, is overdue, and the question of his failure to return in time is under investigation. The other two scholars who have specialized in textiles and electrical engineering respectively are also expected to return soon, and on their return Government hope to lay down more definite lines of action in respect of the industries in which they have qualified, and to bring under more effective control the private industrial institutions which are in receipt of grants-in-aid from the State. The Government grant for this department which was only Rs. 66,700 in 1096 has been raised to Rs. 1,27,000 during the current year, and further allotments will have to be made when these experts commence their work. The building up of industries is necessarily a slow and difficult process, and those cannot help being disappointed who are apt to look for startling results in too short a time.

BANKING.

In pursuance of the policy enunciated in my last address, Government have decided to encourage sound indigenous banking concerns and have directed a deposit of Rs. 25,000 being placed with the Quilon Bank, Ltd., at the low interest of 5 per cent, subject to the Bank satisfying certain conditions calculated to safeguard the investment. Mr. R. Nilakanda Pillai, the Senior Assistant Account Officer, who was deputed to report on the larger project of a State-aided bank for Travancore, has, after studying on the spot the working of that type of banks in Baroda and Mysore, suggested the desirability of opening such a bank here also. His report on the subject was referred to the Economic Development Board for consideration, and the Board has just submitted its reply to the reference. Government hope to be able to pass final orders at an early date. As banking and industries are bound to loom larger in the administrative horizon in the future, Government have deemed it opportune to depute, for a thorough course of training in these subjects in Europe, a competent scholar who would benefit by such training and could successfully fill in due time the role of a Director of these expanding movements. Mr. A. Gopala Menon, M.A., Assistant Professor of Economics in His Highness the Maharaja's College, was accordingly selected to undergo this training on the recommendation of a special board, and he is now studying for the B. Com. Degree of the London University with "Industries" as his special subject. With a view to inculcate banking habits among the poorer classes, Government are making arrangements for an expansion of the Savings Bank activities of the Anchal Department. Government Treasuries will shortly be relieved of this work, and the entire activity will be transferred to Anchal Savings Banks in future, their number being substantially increased. The interest payable on savings bank deposits has been raised from four cash on every three rupees to three cash on every two rupees per mensem and provision has been made in the Savings Bank Rules for the nomination, by the depositors, of the persons to whom moneys standing to their credit may be paid without the need of the production of further evidence of title. It is hoped that the facilities thus afforded will go a great way towards popularizing this form of investment among the classes for whose benefit they are primarily intended.

CO-OPERATION, GEOLOGY AND MINING.

I have only a word or two to say regarding co-operation, geology and mining. For the past twelve months, these departments have not much to show by way of results, although it must be owned that the working of the Co-operative Department evinced some signs of improvement and that the State Geologist has at last brought out his consolidated report on the Geology of Travancore. Mr. Chakko was not able to work the new programme, chalked out for him by Government, of an economic survey of the Geological wealth of the State, owing mainly to the want of an Assistant to help him, whose appointment, though sanctioned earlier, could be actually given effect to only in Tulam 1097. With a view to secure up-to-date knowledge and organizing skill in the head of the co-operative department, Mr. R. Vaidyalingam Pillai was deputed to Madras for a period of six months to undergo a course of training in Co-operation. He has just returned and has been asked to formulate his proposals for the improvement of the department. One of the Co-operative Inspectors has also been just trained in Madras in co-operative work, and it is proposed to utilize his services for the training of the other Co-operative Inspectors under the supervision of Mr. Vaidyalingam Pillai.

FOREST.

The revenue of this department has shown a marked fall; but it should be remembered that this fall was due mostly to the tightness of the money market and the slump created in the timber market by large imports of Burma teak, for neither of which the department could be held responsible. A great deal remains to be done in the way of opening up our valuable forests, and the Government must look to the Conservator for a carefully thought out scheme for the steady expansion of forest road mileage, so as to bring them within the reach of large timber markets. Another direction in which the department has yet to achieve results is the collection of useful information regarding the resources of our forests and the methods of their profitable exploitation and utilization. A beginning, has now been made in this direction, and Mr. R. Dhanukoti Pillai, Deputy Conservator, has been deputed to carry out in the first instance an economic survey of the forest wealth of the Neriamangalam valley and an investigation of the possibilities of the paper pulp Industry, in the Northern Division. With a view to enable him to devote his whole time to higher work, he has been relieved of his routine duties and his reports are awaited. Government also feel that there is scope for the expansion of sandal-wood plantations in the Anjanad valley and that adequate attention has not been devoted to this work in the past. The Conservator has been asked to formulate definite proposals in this matter. The want of training on the part of the most of forest subordinates being a serious handicap to the efficient administration of the department, and the fees charged for such training in colleges outside the State being prohibitive, Government have opened a Forest College at Quilon with effect from Tulam 1097 for the benefit of these subordinates as of those that intend seeking service in the department. The syllabus and the course in this institution are the same as those in the Forest College at Coimbatore and pupils are trained for the Travancore Diploma in Forestry, the Travancore Ranger's Certificate and the Travancore Forester's Certificate.

RAILWAYS.

The important subject of the extension of railways has received the attention of the Government. Owing to the delay in the final settlement of the exact nature and extent of the participation of this State in the development of the Cochin Harbour, the consideration of the question of the extension of the railway from Kottarakara or Kundara in the direction of Cochin has had to be necessarily postponed. Arrangements, however, are almost complete for the commencement of a reconnaissance survey for the extension of the present line from Quilon to Trivandrum up to Nagercoil, while the economic survey of the forest wealth of the Neriamangalam Valley, already referred to has been undertaken with the main object of ascertaining whether a railway from the High Ranges to the coast along the course of that valley would be a paying concern.

MEDICAL RELIEF AND PUBLIC HEALTH.

The Government Bacteriologist, after undergoing the requisite training in Kasauli and Madras, returned to Trivandrum and commenced work in the laboratory newly fitted up for him. Malaria and anæmia are responsible for undermining the health of a large number of people in this country, and Government have appointed a special officer to conduct investigations into the causation of these diseases and formulate measures calculated to minimise their incidence. This officer has already sent up his report on the causation of malaria by mosquitoes in the town of Trivandrum and will in due course engage himself in the study of elephantiasis and its causative factors. The Lepers Regulation has been amended by Regulation IV of 1097, and power has been taken in the amending Regulation to compel lepers of all stages to go to Asylums. The C. M. S. Leper Asylum at Alleppey and the L. M. S. Leper Asylum at Neyyur have been awarded grants-in-aid. The Department of Ayurveda has been thoroughly re-organized and the Trivandrum Ayurveda Pathasala has been converted into a college with a correspondingly large staff. The post of Inspector of Vaidyasalas has been created with a view to make the grant-in-aid Vaidyasalas more useful and efficient. The country was throughout the year free from epidemic diseases. A law for the compulsory registration of vital statistics has been passed as Regulation VII of 1096, and when necessary arrangements have been made to give effect to the provisions of this Regulation, much of the inaccuracy in the registration of births and deaths observable at present may be expected to disappear. Orders have been issued to make arrangements for giving ten vernacular school teachers a course of training in hygiene during the next summer vacation. The selected teachers, after training, will be posted in the eight lower grade and the two higher grade vernacular training schools for boys to instruct pupil teachers in the method of teaching hygiene.

EDUCATION.

Special attention was paid during the year to the expansion and improvement of education in all its branches. As foreshadowed in my address last year, a special conference of officials and non-officials was held in April last to consider the report of the Education Expenditure Committee and the *interim* report of the Committee appointed for the revision of the curricula of studies in vernacular schools for boys. This conference, after a careful consideration and full discussion of the several issues raised in the

two reports, arrived at certain final conclusions which were accepted and sanctioned by the Government in their order No. 1034 of 1921—L. & L. G. dated the 18th July 1921. The most important among the decisions of the conference were (1) that primary education should continue to be free and that the goal of universal primary education should be reached by the State as quickly as possible; (2) that English should be taught as a compulsory subject in vernacular middle schools, the staff thereof being strengthened to the necessary extent; (3) that elementary manual training should be introduced in primary schools and the higher forms of manual training in vernacular middle schools; (4) that the increase in grants to primary school teachers announced by me at the last session of the Assembly was not adequate and that more liberal grants should be awarded to the private schools, both English and vernacular, to encourage private effort; (5) that the salaries of teachers, especially of primary school teachers, should be enhanced; and (6) that with a view to meet the additional expenditure involved in the improvements suggested, the fees in vernacular middle and English schools as well as colleges should be suitably increased. Other decisions of the conference are also dealt with in that G. O.; but it is not necessary for me to recapitulate them here, beyond stating that the conference expressed itself strongly against the introduction of vocational training in institutions which are intended for general education. In regard to manual training school for boys should be retained there to impart instruc-

tion to the pupil teachers coming up to those institutions for training, that 200 teachers who have received the necessary instruction in manual training should be posted, one to each departmental vernacular middle school, where they should teach simple forms of manual training in classes I to IV and the higher forms of the same in classes V and VI, that an attempt should be made to introduce gradually elementary manual training in the primary schools also, by the appointment in them of trained teachers who have received instruction in manual training, and that it would be enough to introduce manual training into English schools after the system has been perfected in vernacular schools. A liberal scheme of scholarships and free ships under preparation, and the provisions of this scheme are calculated to help the really poor and deserving portion of the pupils in Vernacular Middle and English schools. A scheme for the medical inspection of pupils in recognized English schools by qualified medical officers has been formulated and the draft rules on the subject have been published in the *Gazette* with a view to elicit criticism. This scheme will be introduced with effect from the beginning of the next school year and it is likely to cost the Government a sum of about Rs. 5,000 per annum. As promised by me last year, steps are being taken for the establishment of a chair for the teaching of Natural Science in His Highness the Maharaja's College with effect from the beginning of the next academical year. A hostel for women was recently attached to the Women's College.

In the manufacture of cordite at Gretna very large quantities of ether and alcohol were employed. These costly and volatile substances, used merely as solvents by which the raw materials were mixed into a kind of dough, represented the heaviest charge in the cost of production. In the final stages of pressing, moulding, and drying they were at first allowed to escape into the air—a wasteful procedure still common in many commercial manufacturing processes. The technical staff of the Ministry of Munitions evolved apparatus for recovering them from the air, and by the armistice had developed it so far that 55 per cent of the original solvent could be saved. The weekly balance-sheet of large-scale experimental plant showed a profit of 900 per cent after making full allowance for depreciation of the machinery. By arrangement with the Ministry, the Department of Scientific and Industrial Research has, says the "Times," issued for the general benefit a full description of the Gretna results in their technical and theoretical aspects. The remunerative recovery of volatile ether and alcohol can now be guaranteed. The quantity of material and money saved by an installation depends simply on how much of the solvent-laden air can be conveyed to the recovery plant. In the Gretna experience about two-thirds of the solvent reached the plant. In an industry on a piece footing, where rapid production irrespective of cost is not the vital consideration, even better results could be obtained.

Large deposits of tin have been found in the region of Oulmés, south-east of Rabat. The Moroccan Mines Services expresses its satisfaction with the quality of mineral found. Much is quite near the surface, but before exploitation can be conducted on a large scale it will be necessary to build proper roads.

It is reported that all sugar centrals and native mills in the sugar districts of the Philippine Islands are grinding at full capacity, some running day and night. Greater production of centrifugal and less of muscovado is predicted for the season on account of the working of more modern mills. The production of centrifugal is estimated at 215,000 long tons and of muscovado at 70,000 long tons. Philippine centrifugal sugar goes principally to the American market, while muscovado is exported chiefly to China and Japan. It is believed that if centrals have the cane to continue running at full capacity throughout the milling season, fair profits will be made this year at the current price of 3½ cents a pound. New York offers of 4 cents a pound c. i. f. for April shipments are strengthening the market. Field wages in the sugar industry have dropped from more than 50 cents a day in 1921 to 40 cents and even 30 cents a day in some districts, and labour is abundant. Such factors are tending to stabilize the sugar industry of the Philippines.

According to an American official report dated Manila, March 18th, the inactivity in the coconut oil industry of the Philippine Islands, which has prevailed for many months, is evidenced by the fact that of the five mills known to be running, none are operating at full capacity, but are running on a small margin sufficient only to keep the wheels of the industry turning. Copra for export is bringing good prices, which adds to the trade difficulties of the oil products, of which there are large stocks in Manila. The production of copra for the current year is estimated at 7,000,000 piculs (1 picul—1333 pounds).

A Presidential decree approves the installation of a factory for making electric light bulbs in Havana.



Mainly About Persons.



Major Hugh A. Chisholm.

Major Hugh A. Chisholm, Canadian Government Trade Commissioner for India and Ceylon, arrived in Calcutta at the beginning of February and has opened a temporary office at 4, Mission Row. Major Chisholm's transfer to this country is a result of the Canadian Government's recent policy of having its own commercial representatives in the world's trading centres, and at present the Canadian Government has no less than twenty-three of these Commissioners abroad. The importance of Canada as a manufacturing and exporting country has increased enormously in recent years, and although Canadian trade with China and Japan has been developed considerably, with India on the other hand, the boot, as the saying is, is on the other foot. By the appointment of a trade commissioner in Calcutta it is anticipated that the Dominion will secure a larger share of India's trade in such lines as paper and wood products, machinery and building materials, railway supplies, canned foodstuffs, and electro-chemical products, such as calcium carbide, acetic acid, etc., and Canadian importers will be encouraged to receive goods direct from India instead of dealing through firms in New York or San Francisco as hitherto. Major Chisholm will be pleased if business firms interested will communicate with him; and he will be pleased to supply any information required relating to Canada and Canadian trade.

Sir Henry Wheeler.

Sir Henry Wheeler joined the Indian Civil Service in 1891 and spent his first few years in Bihar. From his fourth year onwards, he acted in different districts as Magistrate and Collector. In 1897 he was specially selected to try the Tallah rioters and then joined the Secretariat as Under-Secretary in the Revenue Department. In the following year he joined the Government of India as Under-Secretary in the Financial Department, returning to Bengal for a spell of two years as Collector of Darbhanga. His next appointment was to the Board of Revenue, first as junior and then as senior Secretary and the experience gained in these posts qualified him for membership of the Salt Committee in the cold weather of 1903. He was next deputed to inquire into the method of improving and developing village self-government and village police (the present Chaukidari Manual and a great deal of subsequent development in village self-government is based on the result of these inquiries). Sir Henry Wheeler also served on the Drainage Commission which examined the thorny question of the connection between drainage and malaria. He was then called to Simla as Deputy Secretary in the Finance Department and remained there till the appointment of the Decentralization Committee, which he joined as Member and Secretary. Sir Henry Wheeler returned to Bengal as Financial Secretary and guided the province through

the years that fell to the lot of Sir Norman Baker's administration. A further call was made on his services by the Government of India, first for the purpose of unravelling the difficulties arising out of the repartition of Bengal, and then of Home Secretary. Sir Henry was Home Secretary for 4½ years—including the first two years of the war. On the retirement of Mr. Lyon, Sir Henry Wheeler became Senior Member of Council in Bengal taking his seat shortly after the arrival of Lord Ronaldshay.

Viscount Peel.

William Robert Wellesley, B.A., P.C., G.B.E., Viscount Peel, the newly appointed Secretary of State for India in succession to Mr. Montagu is a grandson of the Sir Robert Peel, the illustrious statesman. His father the first Viscount was Speaker of the House of Commons from 1884 to 1895. Born in 1867, the new Chief Secretary was educated at Harrow and Balliol College, Oxford, and called in 1893 to the Bar from the Inner Temple. Since 1919 he has been Under-Secretary of State for War and Vice-President of the Army Council since 1919. He was a member of the Royal Commission for the Port of London. Previous to 1919 he was Joint Parliamentary Secretary, unpaid, to the National Service Department, a Deputy-Lieutenant for Bedfordshire, a Chairman of the Panel Military Service Committee, Chairman of the Disabled Sailors' and Soldiers' Compensation Committee, Chairman of the London County Council 1914, Lieut.-Colonel of the Territorial Force Reserve and previously commanded the Bedfordshire Yeomanry and was Governor of Victoria College, Manchester. He acted as correspondent for the *Daily Telegraph* during the Greco-Turkish war. As a Unionist M.P. he represented the Southern Division of Manchester from 1900 to 1906, and contested Harrow Division in 1906. He is an Officer of the Legion of Honour. He married in 1899 the Hon. Ella Williamson, daughter of the 1st Baron Ashton and has two of a family. His brothers who were prominent in the war included the deceased Rev. Hon. Maurice Berkeley Peel, M.C. and bar, a Chaplain to the Expeditionary Forces who was killed in 1917 while rescuing wounded. Viscount Peel's uncle Sir William Peel was a sailor who won the Victoria Cross in the Crimea and also distinguished himself in the Indian Mutiny. The Peel family has ever been noted for sound politics, gallantry in war, and love of racing. Viscount Peel will serve India well: of that there is no manner of doubt, and no better choice could have been made.

Plans are on foot for connecting the newly established fishing harbour at Thyboron on the west coast of Jutland by a weekly service with Grimsby, Lowestoft, or London for the purpose of supplying fish to the British market. A boat able to carry 90 tons has been freighted and may start on its first journey in the spring.



Banking and Finance.

INDIAN AND FOREIGN.



Indian Loan in London.

In the House of Commons on March 29 moving the money resolution to authorize the Secretary of State to raise sums not exceeding £50 millions for the service of the Government of India on the securities of the revenues of India, Earl Winterton explained that that was no new step. A number of similar Acts had been passed previously, the last being in 1910 the proceeds from which would not have sufficed until now except that the war delayed the carrying out of capital expenditure on railways and irrigation.

Explaining that under the original Government of India Act money could only be raised in the United Kingdom to the extent authorized by the House of Commons, Earl Winterton declared that the previous unexpended borrowing powers had fallen below £7 millions. The present resolution increased the power to £50 although there was no question of borrowing the whole amount immediately.

Mr. Alexander Shaw said that before the money was voted, the House ought to be informed whether a determined effort was being made to put Indian railways on an economic basis.

Earl Winterton in reply said that the whole sum probably would not be raised for four or five years and would not necessarily be raised here. Earl Winterton admitted that the purchase of material in this country was a very important question, but he was unable to give a pledge in this connection in view of the Assembly resolution of 1919. Earl Winterton added that with improved world trade, he hoped that the existing taxation would yield a greater amount than at present. He thus hoped that it would be unnecessary to impose further taxation as a result of raising these loans.

Bengal Paper Mill.

It is not precisely what the poet Pope would call a "dying, dying fall" which is recorded in the half-yearly report of the Bengal Paper Mill Company; but there is a fall nevertheless; a fall in profit and a fall in dividend—and great is the fall thereof. The profit, which stood at Rs. 11,07,529 in 1918 and at Rs. 11,16,525 in 1919, was reduced to Rs. 9,45,174 in 1920; and now, for the half-year to the end of December, 1921, on account of unfavourable market conditions, cheaper paper, and a disparity between present paper prices and pulp values, to which must be added the baneful influence of foreign imports, the profit is reduced to Rs. 41,851. Taking into account the balance brought in from last time the sum at credit pans out at Rs. 1,60,494. The ordinary dividend, which stood consistently at 52 per cent for the previous four years, is reduced to 10 per cent. And thus, at one fell swoop, the concern is brought down almost to its pre-war level. But we must not of course forget the huge reserves, amounting to more than forty-three lakhs of rupees

which the company did not possess in the pre-war days. Still, looking at the enterprise upon the strength of its dividend-earning capacity, it apparently has the same sort of chance vouchsafed to it as that of the Bengal Jute Mills, three of which passed their dividends last time in spite of huge reserve funds. There will be many similar instances in the near future and when the jute mills repeat their melancholy experiences of 1911, as they may do, investors will then awake to the fact that accumulated reserves do not of necessity assure a continuance of big distributions.

In the half-yearly accounts of the Bengal Paper Mill depreciation takes Rs. 90,110, and the carry forward is Rs. 18,384 as against Rs. 90,354 last time. The shares, of Rs 25 each, which went to 179 in 1920, are now quoted in the neighbourhood of 34. Improvements recently effected in the mill, and the installation of new machinery, will enable the company to produce paper under more favourable conditions, than has been the case hitherto, and unless the dumping operations of foreign importers takes another spoke out of the wheel of the enterprise we see no reason why the results of the current half-year should not be much better than those now recorded. The increased import duty on foreign paper is undoubtedly a bull point. But it is not sufficient. In order to foster the indigenous paper trade the Government of India should do much more than what it has already done. We hope for the best.

Mr. H. P. Stringfellow, manager of the Bank of India, Bombay, since its inauguration, has retired. Mr. Stringfellow arrived in India in 1890, to join the Alliance Bank; he had then received his training in the London and County Bank, and he was one of the first men to pass with distinction the preliminary and final examinations of the Institute of Bankers. He was agent of the Alliance Bank at Cawnpore, Ajmere, and Mussoorie, sub-agent at Calcutta and agent in Bombay for three years. During these early years in India he wrote a useful book on Indian Banking and Practice. On the inauguration of the Bank of India in 1906 he became the first manager and has been closely identified with it ever since. The success of the bank under his control has been remarkable.

A Rio de Janeiro telegram states that a law has been passed relating to the export of sugar and the protection of producers, and a credit of 50,000 cantos of reis (nominally £2,500,000) has been approved for valorization purposes.

As a result of several fresh cases of foot-and-mouth disease in Denmark the only two countries to which it paid the Danish farmer to export, viz., Switzerland and Belgium, have closed their frontiers against live cattle from Denmark.

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Dye Stuffs and Chemical Warfare

By Sir Alfred Chatterton, Kt.

Notable among the recent visitors to India was Field Marshall Sir William Robertson who, as Chief of the Imperial General Staff, occupied one of the most responsible positions in the military administration of the Empire during the war. He is now a Director of British Dyes, Ltd., a company which was formed soon after the war started and largely subsidized by the British Government to undertake the manufacture of those dye stuffs we had formerly obtained from Germany. Our complete dependence on that country for materials essential to the textile trades was not the only disadvantage under which we laboured as the vast chemical works engaged in the manufacture of dye stuffs were at an early stage converted to the manufacture of explosives and poison gas and proved an enormously valuable military asset to the enemy. In a position to accurately estimate the necessity for challenging the chemical supremacy which the Germans have hitherto enjoyed in the dye stuff industry, Sir William Robertson is anxious that the British efforts commenced during the war should be continued in peace time and to that end, he has placed the salient facts before the authorities in this country in the hope that measures may be taken to support the dye stuff manufacturing concerns in Great Britain in preference to reviving a trade with Germany which may enable them to forge a dangerous military weapon.

In 1914, before the outbreak of war, the German chemical manufacturer, except in heavy chemicals, had no rival; but the wonderful work done by British chemists during the course of the war demonstrated that he enjoyed no monopoly of scientific skill, experience or ingenuity. The Bosche was hoisted with his own petard for, though the Allies began chemical warfare very reluctantly, in the end their

technique was overwhelmingly superior. Both sides have learnt a lesson and all the world over, openly or surreptitiously, the development of chemical lethal weapons will go on. Already, it is announced that various promising discoveries have been made and Mr. H. G. Wells has ingeniously described the havoc that might be wrought if we could let loose the energy stored in the atom.

Modern Germany owes a good deal to the inventive genius of Englishmen. It was Perkin who discovered Mauve Aniline and set up the first synthetic dye works. It was Gilchrist and Thomas, two students of the Royal School of Science, who worked out a practical way of eliminating phosphorus in the process of steel manufacture and by their invention of the basic process, placed at the disposal of Germany the vast Minette iron-ore deposits of Elsass. It was the great Exhibition of 1851 that revealed to the rest of the world, and to Germany in particular, the immense superiority which the British Isles enjoyed in all matters pertaining to engineering and manufactures. Resolutely they learnt all we could teach them and pursued our methods to a logical conclusion. For rule of thumb and practical experience, scientific methods were substituted and patient research was found to be more profitable than intuition or flashes of genius.

In the forty odd years between the Franco-German war and the outbreak of the great war, German chemical industry had made astounding progress. In dye stuffs and fine chemicals, they had created a practical world monopoly and almost at a moment's notice they were able to turn from the manufacture of these boasted products of civilization to the manufacture of vast quantities of deadly

gases. Since the Armistice, the German chemical factories have been working under control of some kind and their products have been handed over as part of the reparations. Soon, they will be free from such control and able to recreate the markets they formerly enjoyed.

The modern dye stuff industry in Great Britain is a product of the war. It is true that dye stuffs were made before the war; but it was more or less on sufferance and the industry was of no real importance. Now it is recognized to be a matter of national importance and the Safeguarding of Industries Act will no doubt, to some extent, protect the English manufacturers of dye stuffs in their own home market; but something more than this is wanted. India offers the great open market into which the dye stuff manufacturers of the world can pour their surplus products. India uses vast quantities of dye stuffs and her trade is well worth having, so much so that whoever captures the Indian trade in dye stuffs and fine chemicals will enjoy chemical supremacy. In the future, it will be a struggle between the British and German chemists and the former are handicapped by the forty-year start which the latter have secured.

The question now is, what part India should play in the matter. We have done with free trade and we are going to introduce protection to develop our industries. In time, we hope to become, in all essentials, a self-supporting dominion of the British Empire. There is no fear that our foreign trade will go; but it will inevitably change its character. British industry must suffer in the process of transformation; but, on the whole, there should be a large gain. It is now recognized that we may pay dearly for the privilege of buying in the cheapest market and, under the protection of import tariffs, the people of India will endeavour to attain that degree of mechanical and technical skill which will enable them to supply their own needs from their own resources. In this matter of dye stuffs, there is really a great responsibility thrust upon those who, in the future, will be responsible for the fiscal policy of the country. If Germany obtains the Indian trade in dye stuffs, German chemical industry will again dominate the world and civilization will again be exposed to the dangers from which it is hardly rescued but recently. Let India prohibit the importation of German dye stuffs and she will strike a deadly blow at the German chemical industry and, even though it be at some cost to ourselves, the

cost will be small compared with the enhanced security which must come from the weakening of the German chemical trade. What will India have to pay for this renunciation of German dyes? In reality, very little. Possibly, dye stuffs will cost a little more; but in the long run, it must either be the British or the German manufacturers who will dominate the market and will ever rule supreme and will try to make as much out of it as he can. On this score, therefore, the loss or gain to India will be nothing; but it must be admitted that if German dye stuffs are excluded, the Indian dyer will have to put up with, for the present, inferior dye stuffs. Still, these dye stuffs are good enough for all practical purposes and it will be foolish to give encouragement to the German chemist simply because he is in a position to supply dye stuffs of a slightly better quality than can be obtained elsewhere. Synthetic indigo very nearly killed the Indian indigo industry. The war revived it and promising research work has recently been stopped to give the Hun another chance. India is voluntarily placing herself in the hands of the Hun. No doubt, she is doing so unwittingly. The political people who control are somewhat ignorant of practical matters and they have yet to learn how to utilize the expert and the man of experience. For a while, it would seem as though the natural order must be reversed and the practical man indicate to the politician what he should do. When tariffs come up for discussion, when economic questions are treated as practical problems and when a real effort is made to bring the resources of the State to the aid of those who are endeavouring to develop the country, then probably such a proposition as that which I now make, that German dye stuffs and fine chemicals should be rigidly excluded from the country, will receive proper consideration.

Some little time ago, I put the same proposition before the Indian Fiscal Commission as an example of Imperial Preference. It is a very good example of Imperial Preference; but it is not as such that I now discuss it. Dye stuffs are a luxury. For 5 or 6 years we have done very well with a comparatively limited supply and if, in the future, India gives no employment to the German chemist, at worst, she will simply have to go without a few very fine dye stuffs which, however, are of comparatively little economic importance as the quantity used is not large. We have played with the indigo problem for a long time. It has always been an important article of the foreign

trade of India. For both practical and sentimental reasons, we should not abandon the field to the synthetic chemist. Moreover, natural indigo is superior to the synthetic compound. Much good work has recently been done to improve the yield and those who are working at the problem and those who are finding the money to carry out the researches will work with better assurance if they knew that the country was not open to receive the products of the synthetic chemist. For the

good of humanity, it is not wise to let the German chemist flourish in peace whilst he is preparing for war, so that in the end he may dominate the world and draw tribute from the conquered nations. That this was his aim, none now doubt; that it may be his aim again, is very probable. It will, therefore, be true wisdom to put obstacles in the way of further development of scientific industries in Germany.

India's Steel Resources.

Quite a flutter was caused recently when it was announced that the Sheffield firm of Cammell, Laird, & Co., was associating itself with a new steel manufacturing enterprise in India, and it was added that India had already two or three steel plants working, two or three more in course of erection, and that the great Dependency would not only very soon supply all its own requirements in the iron, steel and engineering lines, but that it would become an active competitor in outside markets. The steel resources of India are overrated. The steel requirements of India are underrated, says the "Manchester Guardian."

Before the war we sent £9,000,000 worth of railway equipment, £7,000,000 worth of other iron and steel, and £4,000,000 worth of other engineering products to India in a year. Those figures may be quadrupled in the near future, notwithstanding India's own steel enterprises. Just before the war it was calculated that India needed another 30,000 miles of railway—a mileage nearly equal to the great network of the United Kingdom. The need to-day is much greater. Besides this, the existing railways have lacked repairs and renewals for seven years.

In the last financial year the Indian Government set aside nearly £20,000,000 for railway equipment alone, merely for the minimum of renewals and repairs, but Great Britain, with its strikes and "cacanny" and inflated costs, failed to deliver the goods. In the twelve months we only did half the trade in the Indian market in this line we did before the war, while our United States rivals did six times as much business, and the Japanese did sixteen times as much business there as they did before the war.

The addition to the railway renewals and proposed railway construction schemes, which will call for millions of tons of steel, great bridge, sanitary, water works, irrigation, elec-

trical, and other steel consuming plans will be proceeded with, and will extend over many years. The local plants are not likely to meet the local demands.

The new enterprise in which Messrs. Cammell, Laird are interested is on ambitious lines. Messrs. Bird and Company, of Calcutta, who are joint partners in this concern, called the United Steel Corporation of Asia, own a modern engineering works near Barakar. It is now proposed to erect works with an ultimate capacity to produce 500,000 tons of finished steel products annually. There is also a company called the Kirtyanand Iron and Steel Co., Ltd., of Calcutta, erecting a foundry.

But it need not be assumed that British steel manufacturers are going to lose their market in India. On the contrary, it is highly probable that India will import very much more and not less in the future than she has done in the past. Coal and labour are both formidable problems. India produced her record output of 22,000,000 tons of coal in 1919. Last year the production was only 18,000,000 tons. The known deposits are very limited in extent and poor in quality. With the extension of railways the development of cotton mills, and the growing demand for coal for ships in Indian waters, it is at least possible that the iron and steel industry will be faced with a serious proposition in connexion with fuel.

The iron ore reserves appear to be quite ample; but labour is a problem. For the heavy work of mining, and the hot and heavy work of iron and steel making, India has little or no suitable labour. Indian labour is pre-eminently adapted to agriculture, with the wonderful development and prosperity of Indian agriculture. Indian labour will be less and less inclined to take up mining, iron and steel working. Indian labour is doing fairly well in textiles and various light lines, but steel is another matter.

The Need of the Times.

By N. Gratton Doyle, M. P. for Newcastle, N.

It is surprising to see how many people there are to-day who object to cheap goods on one ground or another. Every one of us, of course, is prepared to buy cheap goods made by other people, but to set about making our own goods cheaper is quite another matter.

Recently a gentleman wrote to the Press complaining that too much stress was being laid on the necessity for cheap goods. What we ought to think about, he said, was a decent standard of wages and living. If goods had to be a bit dearer in consequence, we must put up with it. He was very much afraid, indeed, that cheap goods would mean a resurrection of the old days when Labour fed on dry bread and slept on straw, in order to enable the greedy capitalist to build up a huge business.

Many other people seem to be afflicted with the same idea. Yet in these times it is fundamentally wrong, as a very little illustration will show.

Prices to-day are much higher than they were in 1914, and so are the money wages of Labour. Yet when has Labour been more truly cheap than it is to-day? When has there been more "eating dry bread and sleeping on straw" than to-day?

If a commodity is at its cheapest when it cannot command any price at all, then Labour to-day, in spite of our dear goods, is decidedly at its cheapest. And Labour's standard of living is certainly worse than it has been for many years.

The attempt to make goods cheaper and more plentiful, therefore, could hardly make the condition of Labour worse, though it conceivably might bring paper wages down a bit.

Moreover, we have very little choice in the matter. No amount of argument will alter the fact that other countries are producing cheaper goods than ours, and are getting a preference in trade in consequence. No action of ours will prevent their doing so. Nor can we force the markets to receive our dear goods whilst there are cheaper ones about.

The point that needs to be hammered home is that we cannot fix the price for the world's markets. The markets fix the price for us. If we cannot get down to it, we must suffer in consequence. In other words, if to-day we do not bring our prices to the level of our competitors, we can sell no goods and employ no Labour. If Labour is to have even dry

bread and straw bedding value, prices have got to come down.

Concentration on putting out cheap goods is, indeed, the only hope of allowing Labour to have any value at all; since it is the only hope of securing that volume of trade which alone can create a demand for Labour.

There is nothing for Labour to be nervous about in a general fall of prices. It may enable the capitalist to build up a big business, but the bigger the business, the more Labour it must employ, and the greater the demand for Labour, the more solid must be the basis of Labour's wages.

But there are other people besides Labour who are nervous about decreases of prices. The retail trader dislikes them extremely.

During the war and the months immediately following it our traders got used to making a large profit from a comparatively small turnover. They cannot yet get back to the idea of making their income on a large turnover and a small profit. The efforts at cheapness made by manufacturers and wholesalers are undoubtedly being partially defeated by the obduracy of the retailers.

Yet this idea, too, is false. A large profit secured on a small turnover is never so safe as the same profit secured in smaller doses on a large turnover. Did the retailer but see it, high prices have always a tendency to diminish the volume of trade, and every loss of trade he suffers means a great deal to him when so much of his profit is secured on so small a portion of his goods.

In other words, if every pound of his profit is secured on five pounds' worth of goods, the loss of five pounds' worth of business will cost him more than if his pound of profit depended on ten pounds' worth of goods.

To-day, as ever, the stability of trade depends upon a level of prices which will secure the widest possible market. To concentrate on producing and selling cheap goods is also to concentrate on stable wages and stable profits. These, however small, are far better than high paper wages and profits and no business.

H. M's. Commercial Secretary at Christiana reports that it is proposed to commence immediately preliminary work on the two electric railways for which concessions have been granted to A-S. "Akersbanerne."

Proposed Settlement of International Debts.

The sudden dissolution of the Cannes Conference not only left unsettled the question of a reduction in reparation payments during 1922 but postponed consideration of the division of the first milliard gold marks paid in August last, the assessment of the Saar mines, the cost of occupation, the ratification of the Wiesbaden Agreement and matters connected therewith. These subsidiary questions were decided to the satisfaction of the allied Finance Ministers at a conference held in Paris early in March, when also a demand was made by the United States Government for repayment of the occupation expenses of the American Army up to May 1, 1921, amounting to 211 million dollars. This claim has now been formally presented to the Allied Governments.

At this conference a plan for the contingent reduction of the capital sum of Germany's liability was put forward by the British representative. This scheme, according to press reports, embraces the following suggestions:—

(1) The reparation debt to be reckoned at 110 milliard gold marks as on January 1, 1922, the direct and indirect payments up to that date being taken as equivalent to 25 milliard gold marks.

(2) In satisfaction of 65 milliards of this debt Germany to accept a contingent liability to pay on demand any principal or interest in respect of inter-allied war debts which any creditor Government may exact from any debtor Government. Obligations of the German Government, payable at one month's notice, to a total of 65 milliards to be deposited with the Reparation Commission to rank, as and when notice is given, *pari passu* with any German Government obligation then outstanding.

(3) Great Britain and France to agree to demand repayment from allies only if and in so far as they themselves are called upon by the United States Government to make payment and fail to recover from Germany.

(4) Of the remaining 45 milliards, 5 milliards to be converted into a sterling debt of £250,000,000 to the British Government, carrying no interest for three years and thereafter 5 per cent per annum, payable half-yearly.

(5) The remaining 40 milliards to carry interest at 5 per cent per annum, payable half-yearly, and to be divided among the allied powers, other than the British Empire, in accordance with the Spa percentages, subject

to such modifications as may be agreed upon in view of actual receipts by individual Powers up to the end of 1921.

(6) Each power entitled to a share in the abovementioned 40 milliards to be allowed to negotiate for deliveries in kind up to the amount of its share at any time remaining unpaid.

(7) Germany to raise by international loan not less than 3 milliards in 1922, 7 milliards in 1923 and 10 milliards in each of the two succeeding years. If before January 1, 1926, Germany has discharged with interest 35 milliards out of the 40 milliards, plus contingent liabilities then accrued, the armies of occupation to be withdrawn by May 1, 1926.

These proposals are in substitution of the schedule of payments laid down by the London Ultimatum, but the agreement may be terminated by the Reparation Commission on three months' notice unless Germany duly observes a number of conditions aiming at the reorganization of her internal finances.

By this scheme Germany's minimum annual liability would be 2,000 million gold marks for the next three years, rising thereafter to 2,250 millions. Her maximum liability in any one year would be dependent on the payments made by debtor countries in respect of inter-allied debts which apparently are taken to amount in the aggregate to 65 milliard gold marks exclusive of the Russian obligations.

Several points arise on a consideration of the scheme. In the first place, assumption by Germany of liability for the inter-allied debts does not seem to have been secured. The wording in provision (2) above indicates that Germany's contingent liability in respect of principal and or interest is limited to a maximum of 65 milliards. If this be so, then the payment of interest alone by the allies for a long period, and reimbursement by Germany, would ultimately extinguish altogether the latter's capital liability and yet leave the principal of the inter-allied debt undischarged. The fact that 65 milliards is taken as representing the total of the inter-allied debt, whereas the net amount sufficient to discharge that debt is in fact much less, may perhaps be taken as evidence of a desire to reduce to as small a total as possible Germany's actual capital liability, as compared with the sum demanded by the London Ultimatum.

The scheme was submitted to the Paris Conference but as yet has not advanced beyond the stage of discussion.

Agriculture in Bihar and Orissa, 1920-21.

By "Viator."

The Report on the working of the Agricultural Department in Bihar and Orissa for 1920-21 is the most depressing report it has ever fallen to our lot to review in these columns. The Bihar reports have never been exhilarating documents. The agricultural classes in that Province, from the largest zamindar to the smallest tenant, have so far proved singularly unresponsive soil to agricultural propaganda whilst the Agricultural Department has never been anything but understaffed since its establishment. And now, just when the outlook seemed to be improving, when the unexpected arrival of three Deputy Directors from England gave promise that the programme which the Department had set before itself would be fulfilled much earlier than had been expected and that it would not be long before the Province was divided into seven agricultural circles in which agricultural conditions were, comparatively speaking, uniform in character, with a central farm and outlying minor farms in each, it appears that the elected representatives of the people of Bihar have still to be convinced of the value of scientific agriculture! It is true that the record of the Provincial Department has been far from glorious, but its critics have only to look across their own borders to the United Provinces, the Central Provinces, or even Bengal, formerly no more progressive than Bihar itself, to see what can be accomplished by a Department which is not starved of staff, funds, and, above all, the sympathy and help of the classes in which some measure of enlightenment may reasonably be expected. We learn from the Government review that "the general policy of the Department was examined by a Conference in July and will be further examined by a special Committee shortly, whilst an Advisory Board has been appointed which will examine the further developments." Thus a general halt has been called, while the chosen representatives of the people familiarize themselves with the question of future policy and express their considered opinions." We do not know how these Conferences, Committees and Boards propose to set about their task but we think it would be well if a deputation from the Bihar Legislative Council were to visit any of the Provinces we have mentioned or were to go further afield to Madras, the Punjab or Bombay. In any and all of them, we are certain it would be overwhelmed by

testimony of the value of the work the Agricultural Department has done in transforming the face of the countryside and of the amount of money it has put into the pockets of large and small landholders and tenants alike by such introductions as 4 F cotton and Pusa and Punjab wheats in the Punjab, Pusa wheats in the United Provinces, Company cotton and Mr. Parnell's selected varieties of paddy in Madras and roseum cotton in the Central Provinces, to mention a few of the most outstanding successes. We would specially commend to its notice the private farms in Oudh, for it is there that conditions are most similar to those in Bihar and it is there that it has been most successfully demonstrated what can be achieved by the co-operation of the Agricultural Department and the large landholder. The enlightenment of the Bihar Legislative Council is, we are convinced, far less than we think it if the deputation did not return with the fixed intention that, if the Provincial Department continues to lag behind others, it should not be due to any fault on the part of the Council and that, outside the wall of the Council Chamber, its members should do their best to awaken the agricultural classes from their present state of apathy. Such an attitude would entirely alter the prospects of the Sabour Agricultural College, the outlook for which is dark in the extreme. For the Report shows that of the 57 students there, 17 only came from Bihar and Orissa. Bengal supplied 36, Assam 3 and Nepal 1. The Bengal students will shortly be withdrawn to fill a provincial college which will also supply the needs of Assam and it is clear, therefore, that Sabour must come to an end unless the people of Bihar change their views in regard to agricultural education. For, as the Government say, the education of candidates for posts in the Agricultural Department does not by itself justify the continuance of the College and could be arranged otherwise. The Joint Conference has come to the conclusion that the full two years course, short enough as compared with the three and four years courses of other colleges, meets no extensive demand though the short courses are useful. The Committee which was about to assemble when the Government review was written was specially to consider the matter and also the question of other forms of agricultural education.

Mr. Tanner, who is officiating as Director of Agriculture during the absence of Mr. Dobbs on leave, may well talk of depressing and discouraging circumstances. Nevertheless, some progress was made and if the members of the Legislative Council take the trouble to study the Report as we trust they will, they will realize the latent possibilities of the Department and find ample reason for coming to the conclusion that it is principally lack of staff and funds which has prevented it from justifying its existence in their eyes. In Orissa, for example, the extension of that very profitable crop, groundnut, has been checked because only one inspector is available for propaganda work. At the Kanke farm in Chota Nagpur, the season was largely wasted as regards selection work on paddy because no sufficiently trained botanist was available to look after the work in the absence of Mr. Dobbs on whom, owing to lack of Deputy Directors, devolved the dual roles of Director of Agriculture and Deputy Director of Agriculture for the Chota Nagpur Circle. In Chota Nagpur, we are told that a certain amount of recommended seeds of paddy, sugarcane, wheat and groundnut has been sold but that final selection of seeds has not been reached in most instances. Here again, it is principally lack of staff which has prevented improved varieties from being selected or multiplied on a scale at all comparable with that in other provinces. The position is that there has been no staff for selection, no staff for multiplication and no staff for distribution, and that such small measure of success as has been achieved has been with introductions such as Kakya Bombai jute or Pusa wheats in the evolution of which the Provincial Department has had no hand. If the experiment in progress in discovering the possibilities of growing rabi (cold weather) crops in Orissa proves successful, as it bids fair to do, the results, limited in scope though the experiment is, should mean an increase in wealth which would go far to meet the whole cost of the Department. We have said "limited in scope," for the idea is not the general introduction of rabi crops but an introduction into areas where, as so often happens in a country specially liable to floods, the crop is destroyed at too late a stage to allow of replanting. In such circumstances, a crop is required which can be planted quickly and matures early. Pusa 4 wheat, gram and mustard were all very successful, Pusa 4 wheat giving 18 maunds to the acre.

In a province with so many large estates as Bihar and Orissa, there is special scope for the introduction of agricultural machinery such as motor tractors, oil engines and pumps and rice hullers which involves the investment of capital on a considerable scale. The Province now has an Agricultural Engineer who is ready and anxious to advise on the most suitable type of machinery to meet individual requirements but it would seem that his main activity since his arrival in December, 1920, has been well-boring. It is, at any rate, something that there is an increasing demand for his services in this direction.

To sum up, the choice before the Bihar and Orissa Legislative Council lies between mending and ending its Agricultural Department. If the Department is to continue to be starved of staff and funds, it may as well be closed down speedily. If it is given both as well as the confidence of the Council, which is even more important to it, we have no doubt that, under the guidance of Mr. Dobbs, it will give results which will both surprise and gratify those who are now its sternest critics.

Gold is one of the things, that cheapening would spoil. Mr. Thomas Edison, the famous inventor, states that in consequence of a discovery made in the last two months it may be possible to make gold artificially, says the *Mail's* New York Correspondent: "It has been discovered," he said, "that lead, instead of being an element, is composed of two ingredients. This new discovery is a part solution of the problem of making gold artificially. I have always felt that the clause in bonds which provides that they shall be paid in gold of a certain fineness is dangerous. What would people who own the bonds say if they woke up some morning to find that gold could be manufactured as cheaply as pig-iron? Well, that is exactly what may happen any day."

The delegation from the Scottish Woollen Trade Mark Association was heartily welcomed by the Board of Trade and other commercial organizations in Montreal and Toronto. At a banquet by the Toronto Board of Trade Sir James Woods urged that all possible trade should be done within the Empire, and as far as possible goods which Canada required to import should be brought from Great Britain. This sentiment was emphasized by all other speakers.

Education in the United Provinces, 1920-21.

By A. J. Saunders, M. A., F. R. Econ., S., American College, Madura.

The General Report on Public Instruction in the United Provinces of Agra and Oudh for the year ending 31st March, 1921, has been received. (Allahabad, Superintendent, Government Press, 1921, Re. 1.) The Report deals with the ordinary items of educational interest, such as — University and Collegiate, Secondary and Primary education; Training Institutions; Female Education; Education of special classes; and Miscellaneous items. The Report is interesting as showing the reaction on education of two new factors in Indian life — the operation of the Reform scheme and Non-Co-operation. There should be mentioned also that we find the beginnings of the reorganization of the Allahabad University according to the recommendations of the Sadler Commission in the period under review. "While other provinces, notably Bengal, to which the recommendations of the Sadler Commission had direct reference, have formulated no plans of reorganization, the United Provinces, under the inspiring leadership of Sir Harcourt Butler, now possess a constructive programme."

The report states that the year has been one of great educational activity. The two events of greatest moment were the laying of the foundation stone of the Lucknow University by His Excellency the Governor, and the establishment of the Muslim University at Aligarh. From January, 1921, with the inauguration of the Reforms the main branches of education were transferred to the immediate control of Indian Ministers. The Hon'ble Mr. C. Y. Chintamani has been placed in charge of Anglo-vernacular education, and the Hon'ble Pandit Jagat Narain of Vernacular education. European education remains a reserved subject. Vernacular education has made a considerable advance, but owing to economic and political causes not as much was hoped for. Educational matters received their due share of attention in the Council throughout the year, though little of importance was discussed till the meetings of the Reformed Council in February and March. The most important educational resolution carried was the one recommending the abolition of the existing age limit of candidates for the Matriculation and School-Leaving certificate examinations; it has since come into actual operation. Despite the aggressive efforts of the agitators to promote strikes on the part of

students and resignations of teachers in connection with the movement of Non-Co-operation, the Report states: The result, however, was a most severe defeat for the Non-Co-operators. In Anglo-vernacular schools, which were affected most, only four teachers in Government service and 52 in Non-Government employ resigned or were removed on account of their participation in the movement; while the figures received of the enrolment in the session 1921-22 show little evidence of any decrease in numbers which can be ascribed to Non-Co-operation.

Further steps have been taken to work up to the proportion of 50 per cent of Indians in the Indian Educational Service laid down by the Secretary of State by the transfer of twelve posts from the Provincial Service. The percentage of Indians in the posts actually filled is now 26.5, and the percentage is likely to be increased still further in the near future in connection with the filling up of vacant posts.

The most important thing that one notices in the report in the section on University education is the reconstruction of the University of Allahabad; the scheme proposes "to substitute at Allahabad for the collegiate system, with as little disturbance as possible of existing conditions in outlying colleges, concentration and a corporate existence by gathering together at a common centre the teachers and the taught. Under this arrangement the University would still prescribe courses and hold examinations for its scattered colleges; but there would be at Allahabad centralization whereby the control and direction of University work would be unified and extended over all the local activities of the University, and the teaching in all its branches be conducted by the University itself."

In Benares Hindu University the "Compartmental System," similar to that which obtains in Madras University, has been introduced. But one can hardly believe that the standard of scholarship required is equal to Allahabad or Madras when one reads that only three candidates were unsuccessful out of 47 who appeared in the M.A., and M.Sc. examinations.

The number of secondary schools of all kinds has increased by 103 to 952, the increase being 94 in vernacular schools for boys and 12 in schools for Indian girls; while there has

been a decrease of 3 in European schools for boys. The enrolment has increased by 2,196 to 110,686, and expenditure by Rs. 6,53,215 to Rs. 55,42,477. The average cost of educating a boy in an Anglo-vernacular school has risen to Rs. 62.4 per annum; while the amount he pays in fees has diminished to Rs. 22.7. In Government schools the average cost per scholar is Rs. 77, and in aided schools Rs. 54.3. per annum. In unaided Anglo-vernacular schools the average cost per scholar is Rs. 62, and the average fee is Rs. 17.

It is surprising and disappointing to find that the Inspectors generally are rather despondent about the quality of the teachers' work. One Inspector said: "Teaching is not improving. There is a general air of depression amongst masters, and a lack of energy in their work."

The question of maintaining discipline has been a serious one all through the period under review; "Discipline has suffered considerably, especially in the larger towns, from the effects of Non-Co-operation. The number who actually left the schools was comparatively small, but there was a general weakening of respect for authority. Since the close of the year under report the state of affairs has improved very considerably. The difficulties of headmasters would be much decreased if they could always rely on the support of the parents in their efforts to maintain a proper standard of discipline."

Primary Education shows an encouraging expansion. The Report says:—

The second instalment of the three years' programme for the expansion of primary education has been carried through. The number of schools has increased during the year from 13,597 to 15,094, *i.e.*, by 1,497, or 11 per cent; the number of teachers from 27,029 to 28,915, *i.e.*, by 1,886 or 7 per cent, and the number of scholars from 759,672 to 805,150 *i.e.*, by 45,478, or 6 per cent. The result of the programme for the first two years has been an increase in the number of schools from 11,504 to 15,094, increase of 3,590 or 31 per cent, of teachers from 24,077 to 28,915, increase of 4,838, or 20 per cent; and of scholars from 685,830 to 805,150, increase of 119,320 or 17 per cent.

This result would have been much higher only for certain economic factors, which operated against expansion. As the Chairman of one District Board said: "Labour is dear and not only dear but scarce and with prices of all necessities running high, parents find it necessary to utilize the services of their

boys in the fields." It is a fact worthy of special notice and also of imitation by other provinces that the United Provinces are trying to make the Village School a real centre of culture and progress to the community. They have already village libraries in connection with vernacular schools, and village lantern lectures dealing with many interests of village life. Many improvements are needed in this work, but it is a start, and a start in the right direction. Other interesting and profitable features may be added so as to make the village school the real centre of community life.

It is a disturbing fact to note that there is a decrease of 39 girls' schools wholly among private institutions however. The number of scholars fortunately has increased by 1,288. It is a hopeful sign that the number of public secondary schools has increased by 12 to 119, and the number of pupils has increased by 1,540 or 14 per cent. The expansion of primary education for girls depends largely on the efforts of local bodies. It is hoped, says the Secretary to Government, that District Boards will take full advantage of the funds placed at their disposal during the current year, and that Municipal Boards will co-operate more closely with the Inspecting staff in furthering the advancement of female education.

It is interesting to observe that the total number of Hindus under instruction has increased from 801,534 to 836,875 or by 4 per cent, and that of Mahomedans from 187,602 to 192,325 or by 2½ per cent. Hindus seem to predominate in all public schools, while the Mahomedans are more numerous in private schools.

There are two special movements encouraged by the Department of Public Instruction in the United Provinces which I wish to commend. They are — The Boy Scout Movement, and the Education of the Depressed classes. The Scouts have two branches: The Seva Samiti Scouts and the United Provinces Scouts. They both have had a successful year; the latter organization has increased its troops from 4 to 74. The movement was greatly encouraged by a visit from Sir Robert Baden Powell.

Since 1918 the Board of Education has encouraged the appointment of supervisors for the purpose of visiting communities of the depressed classes, explaining to them the advantages of education, and helping them to establish schools. The experiment was tried in three districts, and has been most encouraging. In the Meerut district 63 new schools for the depressed classes were opened with a total enrolment of 1,500 pupils. The need and

importance of this work is seen when it is remembered that of this community throughout the Provinces only 18,200 pupils were attending school.

The Report, prepared by N. A. Rust, M.A., Officiating Director of Public Instruction, United Provinces, is a most interesting one, and shows that the Provinces realize that the work of education is essential to the progress of the people. Good work has already been done by the Department, and extensive plans are being worked out for future progress.

The general summary is as follows:—

The total number of all classes of institutions has increased during the year under report by 1,077 from 20,191 to 21,268. The number of public institutions has increased from 16,489 to 18,158, while the number of private institutions has decreased from 3,702 to 3,110.

The number of scholars attending these institutions has increased from 1,005,600 to 1,047,761. The number in the public institutions has increased from 931,569 to 981,744, while the number in the private institutions has fallen from 74,031 to 66,017. The percentage of total scholars to total population has risen from 2.15 to 2.31.

The total expenditure on education from all sources has increased from Rs. 2,28,59,766 to Rs. 2,41,59,453. Expenditure from provincial revenues has risen from Rs. 75,84,572 to Rs. 1,04,71,091, while that from local funds shows a decrease of Rs. 7,17,358 from Rs. 44,15,369 to Rs. 36,98,011, which decrease is accounted for by change in classification. Expenditure from Municipal funds has increased from Rs. 6,46,051 to Rs. 7,23,358, while expenditure from fees shows a decrease of Rs. 3,64,214.

Indigo Research Work in India.

Professor Henry E. Armstrong, writing to "The Times" of February 20, says: "To my horror, I have a telegram from the Indigo Research Chemist in India—'Coming home, Indigo discontinued.' He went out in 1916 and at the end of a year entered into an agreement for a period of five years. I have been in almost weekly communication with him and can therefore speak with confidence as to his work.

"He has been able to explain why the crop failed and good seed could not be produced and to show how satisfactory crops may be obtained, the results have indirectly been of much value to Indian agriculture in general. Latterly, he has been engaged in studying the extraction process and has already made important improvements but much remains to be done. The economic side has also been developed. It is clear that indigo may be produced at a price at which it may be put in competition with synthetic indigotin in the main, but not the only, dye-stuff constituent of natural indigo; this latter, we have been able to show here certainly has a superior value to indigotin for heavy shade on cloth.

"Of all colouring matters, indigo is the most widely used and the most valuable. Not a few of us are of opinion that there may be a return to natural indigo at no very distant period, as we foresee the time when, owing to changed methods of dealing with coal, there will be much less, if any coal tar

produced and the raw material from which dye-stuffs are now made will no longer be available to the required extent.

"Mr. Montagu, in the course of his speech on February 14, said: There was only one cure and that was in the development of the industrial and agricultural resources of India in order that the people might become richer. To interrupt a scientific inquiry which has been attended with such promising results to Indian agriculture and industry will be economic suicide pure and simple."

Despite the unfavourable condition of the sugar market, a central factory of 10,000 tons capacity is being erected on the north side of Jamaica by English and local capital. It will be the most modern factory of its kind in the British West Indies, embodying the latest equipment for the production of sugar and commercial alcohol. A turbine plant has been installed to generate electricity to drive the machinery.

The quantity of salt cleared in the Calcutta market during the last quarter for which returns are issued amounted to 4,239,545 maunds as compared with 2,558,815 maunds for the previous quarter. Increased imports from Hamburg and Bremen coincided with reduced imports from the United Kingdom. The quantity of saltpetre salt excised in the refineries of Bengal during the quarter is returned as "nil."

Madras Fisheries, 1920-21.

By "Rusticus."

The Madras Government and their Director of Fisheries seem to be somewhat at cross purposes. Mr. Hornell complains bitterly of the inadequacy of the accommodation provided for himself and his establishment and also of the inadequacy of his staff and adds that both his own work and that of his two Assistant Directors is always more or less in arrears in consequence. The Local Government retort by saying that the results of the year were perhaps not so encouraging as a perusal of the Report might suggest, that certain schemes originally included in the Department's programme have proved, under present financial conditions, too costly to justify pursuing them further and that, in the case of certain other experiments, the principal of which is the cannery at Chaliyam in South Malabar, the experience of the year has been the reverse of promising.

The comparative failure of the cannery can, however, hardly be placed to the debit of the Fisheries Department, for, it was due to causes entirely beyond its control. The cannery could not handle fish if there were none to be caught and sardines last year were conspicuous by their absence. The abundance of mackerel did not compensate for this since the demand for mackerel is very small as compared with that for sardines. Prawns, again, were scarce at Chaliyam and, though large quantities were caught at Tanur, they were unfit for use by the time they reached Chaliyam. The cannery was also seriously handicapped by the high price of tinplate and by its unsatisfactory quality. One wishes that Mr. Hornell's remarks on this point could be read both by employers and labour leaders in England. He says that, so serious were the defects in the consignments, that, unless conditions improve, repeat orders may have to be placed in other countries: labour that will not give proper care to the work in hand cannot expect repeated employment: orders are bound to drift to other countries where labour gives proper value for the wages received. Another and even greater handicap to the cannery was the enhancement of railway rates coupled with the withdrawal by the South Indian Railway of the privilege of sending canned fish at half parcel rates. In these circumstances, to which the Government do not appear to have attached sufficient weight, an output of 67,524 tins against 59,586

tins in the previous year and a loss of about Rs. 1,900 cannot be regarded as at all discreditable to the Department. It is evident that it is the large stock in hand, amounting as it does to 82,152 tins which is causing the Government anxiety. Mr. Hornell is of opinion that a reorganization of selling methods is required and that, instead of the products of the cannery being disposed of by retail trade, their sale should be entrusted to a restricted number of wholesale agents who already have the machinery necessary for distribution. The difficulty about this is that, whilst the output is greater than can be disposed of within the Presidency by personal recommendation, it is far too small to be worth the consideration of a wholesale house with business relations throughout India. The Department, we may remark, is meeting the nemesis of its past policy in this respect. A few years ago, the writer, when stationed in the north of India, wrote for a case of the products of the cannery for himself and friends to whom he had recommended them. He was informed that no supplies could be sent to persons living outside the Madras Presidency. Doubtless there were other enquirers who received the same reply and the Department thus lost an advertisement which would have been of value to it in the lean years through which it is now passing. The Government solution of the difficulty is the reconstruction of the cannery on a new site—supplies at Chaliyam are neither large nor regular and the manager has to live two miles away from the factory—and more attention to the selling side of the business.

The experimental station at Tanur, where operations are carried on in the curing of fish and the production of fish oil and guano, fared almost as badly as the cannery, for the same reason, scarcity of sardines. The 100,000 pounds of fish which were cured consisted mostly of mackerel. There was, however, one cheering feature about the work of this station and that was that the fish turned out began to oust the badly cured and often partly putrid fish which has hitherto found a ready sale at the weekly markets in the interior. The Government view the small loss of Rs. 136 on the year's work at the station quite philosophically and remark that experimental stations are not necessarily intended to show a profit.

An important branch of the Department's industrial work is the control of public fish-curing yards. There are now eight of these under its management. The objects with which they have been established are the prevention of the loss entailed on the fishing classes by the purchase for curing fish of salt on which duty has been paid and the prevention of the injurious effects consequent on the supply of badly cured fish. Unfortunately, the simple methods such as cleansing floors, providing ventilation and disinfecting tubs which the Department had to enforce led to trouble with the curers at Tanur and Cannanore. At Tanur, there was a strike which lasted two and a half months during which the curers treated their fish outside the yard with salt on which duty had been paid. At Cannanore, ten Mappila curers adopted the same course. The political influences which have recently wrought such havoc in Malabar were undoubtedly at the root of the trouble.

The revenue brought in by the Fisheries Department in the past has been very largely derived from the chank and pearl fisheries. Pearl fishing is at present in abeyance, for, there are no pearls of any age on the oyster banks. Chank fishing has been going steadily down hill. For the six years ending with 1918-19, the Ramnad fisheries alone brought in the handsome net profit of Rs. 2½ lakhs. Last year, the profit was only Rs. 36,537 and the number of shells fished amounted to only some 280,000 against 435,000 in 1918-19. The reasons given for this falling off are the comparative exhaustion of the chank beds and the failure to find others equally good and the constant difficulty about obtaining a sufficient number of divers. The second of these may be overcome to some extent by the policy which has been adopted of raising the pay of the divers employed on the Tinnevely Coast which is based on the number of chanks fished. A cure for the first is less easily discovered but Mr. Hornell, who was in direct charge of the chank fisheries before he became Director, has promised to make a personal investigation in the hope of finding it.

The inshore fishing experiments which have now been carried on for three years at Madras cannot be said to have given any tangible results. Although it has been demonstrated that better catches can usually be made by the employment of certain forms of Malabar nets used in conjunction with large dugouts, the Madras fisherman is too conservative to adopt new methods. He is only willing to do so if he is bribed and the bribe he asks for it

is permission to fish in the Madras harbour, to which there is the objection that smuggling would be facilitated thereby. The Government appear to be right in their conclusion that the experiments have served no practical purpose in so far as their main object is concerned, though the information which has been collected regarding the seasonal variation in the catches and the relative abundance of each species of fish should be of value. As for deep sea fishing, the visit which Mr. Hornell paid to Scandinavia convinced him of the merits of the Danish seine net. These are operated from large motor cutters provided with motor winches for reeling in the net ropes and for coiling them automatically. Mr Hornell estimates that a type of boat suitable for the purpose, if built in India, should not cost more than Rs. 20,000 when suitably equipped, whereas the purchase and equipment of a modern sea trawler would cost at least Rs. 1½ lakhs. The Government of Madras have decided to experiment on the lines he recommends in preference to trials with a steam trawler. As regards the latter, they prefer to await the results of the experiments the Bombay Government are undertaking.

The one branch of the Department's work with which the Local Government appear to be satisfied is that of inland pisciculture. The Department is gradually taking over from the District Boards the control of the fisheries in tanks and channels throughout the Presidency and is stocking them on scientific lines. Substantial progress in this direction was made during the year in the Nellore, Chingleput and Coimbatore districts. The total revenue derived last year from the fishery sales of the inland waters under the Department's management amounted to Rs. 90,485 against compensation payable to the District Boards of Rs. 55,960 but the cost to the Department of supervision, stocking, etc., is not stated. The weak point about the operations is that the villagers and contractors either do not or will not recognize the difference brought about by the Department's work both in the quantity and the quality of the catch and refuse to bid more for the fisheries than they did before the tanks were stocked. It is hoped that the presence of the Departmental officers at the sales will effect an improvement in this respect, for, as the Government say, an extension of this branch of work must depend on the income derived from it. The research work done in this branch consisted for the most part of investigation into the life habits of food fishes. The early stages

of hilsa were studied as were the nesting habits of the gourami and the breeding habits of two of the largest catfishes found in the Cauvery.

The Marine Biologist devoted himself mainly to the continuation of his enquiries into the species of mullets found at Tuticorin, to the investigation of the rate of growth among the fish living in the Silayatturai backwater, to statistical work on the prawns found in that area and to the collection of plankton, but was unable to complete a report on any of these activities. The Local Government do not see why they should pay for work which does not bring in any financial return and which, in their opinion, should be carried out by the Zoological Department of the Government of India. This attitude to research may be thought niggardly but Governments, like individuals, must cut their coat according to their cloth and, in the present financial stringency, their action in terminating the Marine Biologist's appointment on the termination of his agreement does not appear to us to be open to criticism. We are glad to see that they have permitted the Director to continue the supply of zoological specimens to schools and colleges for educational purposes. This work has increased tenfold since its commencement in 1915-16 which shows the extent to which the specimens are appreciated. One case of specimens properly classified and labelled is worth "all the jumble of unnamed shells with odds and ends of the flotsam and jetsam of the sea" which was all that the best equipped college or school formerly possessed, however near to the sea it was. Mr. Hornell had brought out a guide to the common shellfish of South India as a companion handbook to the collection of shells. It will be welcomed by a much larger circle than that for which it is primarily intended, for there are many residents on the coast who will be glad to learn something about the shells they come across in their wanderings along the shore.

The Madras Aquarium which is certainly one of the sights most worth seeing in Madras, continues as deservedly popular as ever. It attracted some 161,000 visitors last year and brought in a net revenue of about Rs. 5,000, small as is the charge for admission. We are sorry to hear that the proposal to house it more adequately has been abandoned for the present. We trust it will be one of the first projects undertaken when times improve.

A word should be said in conclusion about the social work of the Department, which, since its inception has taken a very special interest in the material and moral welfare

of the fisher classes. There are now 69 fishermen's co-operative societies, an increase of 22 during the year. Their paid up share capital increased from Rs. 49,000 to Rs. 67,000 and the loans disbursed from Rs. 1.18 lakhs to Rs. 1.69 lakhs. On the whole, their condition is sound and their progress encouraging. What can be accomplished by a "very humble, illiterate and backward community" is shown by the purchase for Rs. 1,050 by the Uppalavadi society with the help of a loan from the Central Bank of a plot of land which has been licensed by the Cuddalore Municipal Council for use as a fish market. This, in addition to providing the members of the society with a means of securing the proper price for their fish, will bring them in a revenue of Rs. 40 per mensem. The number of village schools rose from 20 to 28 but their work is hampered by the want of suitable buildings. Temperance work progressed, especially in South Kanara, where a large number of fishermen in Udipi and Mangalore forswore toddy drinking. But an unfortunate feature of the movement is that some of the converts to abstinence are so convinced of its advantages that they wish to impose it upon their fellows by force, and have even gone so far as to place tea and coffee shops in the same category as liquor shops as foes to thrift. As Mr. Hornell says, compulsion to thrift and temperance only invites reaction. He might have added that as Restoration England proved, the last state is often worse than the first. Education, precept and example should be sufficient levers. The "uplift" which has been achieved by the fisher community has received striking recognition in the nomination of one of its members to the Madras Legislative Council.

The German Government is introducing a new gasoline or petrol substitute for the automobiling public, designed to render Germany independent of the importation of foreign petrol. The substitute is composed of a mixture of 50 per cent of benzol, a coal tar derivative, 25 per cent of tetralin, another coal tar derivative, and 25 per cent of alcohol. This mixture received a thorough try out during the recent cross-Germany automobile contest in which its use was compulsory. It failed to meet entirely the expectations of the Government experts and the chemical industry, developing about 10 per cent. less power than ordinary petrol. Another defect was that it warmed up slowly in the motors; but aside from these deficiencies it was found to be a fairly satisfactory substitute for petrol.

Amendment of Paper Currency Act *

By Sir Montagu Webb.

During the last few days Hon. members on either side of me have worked to such effect that a financial gap of nearly twelve crores has opened before us, and the progress of Government will be checked to some degrees till this gap can be bridged in some way or other. The Motion which I now ask this House to accept, will have the effect of placing in the hands of the Government revenue to the extent of over four crores wherewith to reduce the overdrafts of the year now about to close, and three crores of revenue for the coming year to take the place of a portion of that revenue which has been refused to Government by a majority of this Assembly.

My objects in putting forward this proposal are two,—each of great national importance,—first, the provision of revenue; and secondly, the safeguarding during the coming year of the general financial situation which must certainly be very seriously jeopardized, as I shall presently explain, if a deflation of the paper currency on anything like the scale foreshadowed by the Financial Member in his speech of the 1st inst., be attempted.

MYSTERIOUS FINANCE.

Transfers by Government between their various cash balances and Reserves in England and in this country are often matters of great mystery to the public. I am not surprised, therefore, that some people sometimes regard such transfers as “manipulations” of doubtful propriety, or that other people suspect a transfer of Paper Currency interest to Revenue account, such as I now propose, implies, a queer financial outlook almost verging on moral obliquity! For the sake of my own financial reputation, as well as that of my Hon. friend—the Finance Member opposite (to whom my proposal may possibly appeal)—it may be as well if I explain the nature and effects of the transfers that I am now advocating.

First of all I would ask this House to recall the fact that in the four years ending on the 31st of this month, our expenditure has exceeded our income by ninety crores of rupees. Of this huge deficit, no less than thirty seven crores have been made up by watering the

currency, by issuing paper money (covered by Government I. O. U.'s) at the rate of nearly ten crores a year. As I have frequently explained, these continuous additions to our paper currency (which has expanded from about seventy crores before the war to over one hundred and seventy crores now), have had the effect of greatly depreciating our currency. The large increase of purchasing power in the hands of the people has contributed to the rise in prices that has taken place. Prices are now practically double those of pre-war days. And here we have one of the root causes of all our difficulties,—one of the causes which explains why the expenditure of Government always appears to be going up, and why our deficits grow greater year after year.

SILVER DUTY REJECTED.

Now that Government and this House have once more rejected the possibility of obtaining a substantial revenue and of steadying exchange by means of an import duty on silver—and I may say that I regard this rejection as a step in the direction of financial suicide, (for such a duty *without* a bounty on export would keep the rupee from sinking as low as it can otherwise fall, whilst an import duty *with* a bounty on export would prevent the rupee from rising too severely), I see nothing at the moment, as things stand at present, to prevent the sterling value of the rupee sinking to the neighbourhood of its sterling equivalent as mere metal. If this calamity occur,—and I must say that both in this connection and with regard to the exchange fiasco of the last two years, Government have been fairly forewarned,—then the Finance Member, faced by a shilling rupee, will find his next budget burdened by still yet another ten crores deficit by loss in exchange. Therefore I urge that it is of the very greatest importance that we should now find some means for bridging the financial chasm which has opened, and which may possibly open still further, before us.

I mentioned just now that our Paper Currency has already been expanded by I.O.U. issues during the last four years of nearly thirty-seven crores of rupees. Government when compelled to make these issues, fully recognized the drawbacks and the dangers of this make-shift type of finance, and the Hon. Finance Member himself in September

* Part of Speech made in moving an amendment of the Finance Bill so as to postpone the operation of Section 13, sub-section 3 of the Indian Paper Currency (Amendment) Act, 1920, for two years.

1920, went so far as to introduce a special clause into the Paper Currency Act providing that the interest on the Paper Currency securities should be applied, not to revenue, but to the deflation of the Paper Currency, that is, to the repayment of Government's I.O.U.'s against which Paper Currency had been issued at moments of emergency. The Finance Member went even further. He promised that when the Gold Standard Reserve amounted to over forty millions sterling, he would utilize the interest on the Gold Standard Reserve securities also, to repay his I.O.U.'s and so cancel some further portion of this mass of paper currency which has inflated prices. So it will be seen that Government have fully recognized the desirability of deflating the currency as expeditiously as possible. And if the total deflations contemplated were not more than those provided for by the Paper Currency Act, I myself should hesitate to venture to suggest any deviation from the spirit of the Act to this House. But there is another problem—an altogether different problem involved.

FUNDS FOR SECRETARY OF STATE.

If Hon. Members will turn to another portion of the Hon. Finance Member's speech when introducing his Budget a few weeks ago, they will find there is the problem of putting the Secretary of State in funds in England. Now it is estimated that, taking into consideration the amount which the Secretary of State will have to pay during the coming year for the purchase of railway materials, Home Charges, etc., he will have to disburse over fifty-two millions sterling. Out of that £52 millions it is not anticipated that the Secretary of State can hope to borrow in England more than about seventeen millions; so that, in the ordinary course of events, he would have to draw upon India,—that is, sell his Council Drafts for the great bulk of the balance. He may make some recoveries in England—money due to India by the Home Government—to the credit of the account. Now, there is no possibility in present circumstances of his being able to draw upon India for any large sum during the coming year, so that he will be forced to make use of some of the Reserves that he is now holding on account of the Government of India. If Hon. Members will look at the Paper Currency Statement last published, they will see that about four millions sterling worth of securities are now lying in London. And if they will also look at the last published return of the Gold Standard Reserve, they will see that over

forty millions sterling worth of securities belonging to that Reserve are also lying in London. So that Hon. Members will see that there is a way by which the Secretary of State can put himself in funds. He can sell a portion of these securities, and use the money so obtained for buying the railway material and so forth that we require. But if this is done, it becomes necessary for the Government of India under the law to earmark an equivalent amount—*i.e.*, take it from their current revenues,—and put it into the Paper Currency Reserve or Gold Standard Reserve here on this side. Now, what will happen? At the present moment, there are about twenty-four crores worth of gold in the Paper Currency Reserve in this country. If that gold be taken out as the result of the Secretary of State selling Gold Standard Reserve Securities in England,—if that gold be taken out of the Paper Currency Reserve and put into the Gold Standard Reserve here in place of the Securities that he has to sell in London, then, under the Paper Currency Act, the Government of India must cancel an equivalent amount of Paper Currency, its metallic basis having been removed. Here you see how a restriction of deflation of our Paper Currency will come about automatically to the extent that the Secretary of State utilizes the Government of India's Reserves on the other side. In the Hon. Finance Member's opening Budget speech, his deflation was estimated to amount altogether to a possible thirty-three crores of rupees. Now, the whole of our Paper Currency totals a little over one hundred and seventy crores. I ask this House—Does anybody suppose that it would be possible out of a total of 170 crores to cancel in one year, 33 crores? Of course, a deflation to the extent is quite impracticable. It would produce so serious a financial crisis that all trade and commerce would be brought to a standstill.

DANGERS OF RAPID DEFLATION.

I should here like to say a word or two about deflation. When Governments find that the amount of Paper Currency which they have put into circulation is so large as to produce a great advance in prices, create economic and commercial trouble, and produce social and political unrest (such as strikes, etc., owing to prices constantly rising), then they begin to turn their attention seriously to the problem of deflation. During the last few years, every country has dangerously inflated its currency—America, England, France, Italy, Germany, Austria, etc.—all

of course, through the war, and those countries have all been considering how they can best manage to deflate their currencies. America, being a very business-like nation, was perhaps the first to take the matter seriously in mind. There are two things that you can do. You can raise the Bank rate, thereby making money very dear, thus checking the speculation and overtrading; and you can collect extra taxation and with the proceeds cancel some of the excessive paper money in circulation. Both these ways have been tried and, without going into a lengthy history of what has happened in every country, I should like to give this House a couple of extracts from Professor Cassel's important Memorandum which was laid before the Financial section of the League of Nations last September. Professor Cassel—one of the first economic authorities in the world—points out that a too sudden deflation of the currency must produce a rapid lowering of prices that may result in chaos. It would benumb all commercial enterprise, it would check industrial activity, depress commercial effort and lessen the volume of production. Professor Cassel's exact words are—"The prospect of a long period of falling prices is most likely to kill industrial enterprise and the very spirit of economic progress."

Now in the case of America, this is what has happened, according to Professor Cassel:

"The effects of a too sudden deflation in the case of the United States have been rather pernicious.... The steady reduction of prices has made it impossible in a great many cases to pay back money borrowed at a time when prices were higher. Thus, a large amount of what is called frozen credit has been created. The liquidity and even the ultimate solvency of smaller banks have thereby been impaired. Further restrictions of credit have followed with the result that prices have been forced down still more, and fresh amounts of frozen credit have been created..... The process of deflation has evidently in this case led to a vicious circle from which it seems extremely difficult to escape."

Further, I should like to remind the House that the fall in prices during the last year has already been very great in Europe and America. Professor Cassel describes it as..... "perhaps more violent than any other in the economic history of the world." His conclusion is as follows:—

"The world's work has been brought to a standstill to a degree that we have never witnessed before. Unemployment has risen

to an alarming figure, particularly in countries where the policy of deflation has been applied most severely."

I think that I have now said quite enough to emphasise and prove my point that a deflation of the Indian currency next year by anything like thirty-three crores of rupees is absolutely unthinkable. I hope that I have made myself quite clear. Whilst you cannot deflate the Indian currency by 33 crores in one year, there is no reason why Government should not attempt to deflate it in a moderate degree. This they will have to do in order to give the Secretary of State all the money that he will require for the Home Charges, Railway purchases, etc., and therefore it is not necessary by legislation to force Government to utilize a further three or four crores per annum for that purpose. There is a very large margin of deflation which must take place in any case quite apart from this statutory deflation. Therefore, I urge upon this House the amendment of the Paper Currency Act so as to permit of this six or seven crores, which is only a small part of the coming deflation, to be otherwise utilized, and with the further object which I have in mind of providing Government with some small amount of revenue,—over four crores in the year now closing, and perhaps three to four crores next year to take the place of a portion of that revenue which has been hacked out of the Hon. Member's Budget by the axes of the Democratic and National Parties.

And, in conclusion, I would appeal to the Hon. Finance Member, to reconsider his promise to utilise the interest on the Gold Standard Securities for the purpose of cancelling paper currency. I would ask him to reconsider that promise and to think whether the exigencies of the present situation would not permit him to utilize that interest also, as well as the interest on the Paper Currency Securities, as revenue during this and the coming year.

I commend my motion to the House. And I must add that my proposal receives the unqualified support of the Bombay Chamber of Commerce, and also of the Karachi Chamber of Commerce. I have received telegrams to that effect. The latter Chamber would have much preferred to obtain further revenues by a stiff import duty on silver, but in the absence of that, they will accept this proposal.

An aerial survey of the hinterland of British Guiana is being conducted by the Bermuda and West Atlantic Aviation Company.

Protective Tariffs for India.*

By Hon'ble K. Venkata Reddi Naidu, Minister of Development, Madras.

We advocate protection to encourage Indian industries, to provide work for our own labourers, to invest our own capital, to stimulate our infant industries, into striving and energetic adult industries and to stimulate diversity of employment. It is thus a patriotic policy. The new duties that we propose will be a strong incentive for capital to be invested in industries. This will give work to our labourers, and, naturally, it would also increase their wages. The agricultural labourer is, at present, paid very low and it is easy to divert him to industries without causing much dislocation in agriculture itself. And when the wages of the industrial labourers are raised, the wages of the agricultural labourers also must rise. All these would mean a higher standard of life. A protective tariff also increases our revenue and under the present financial condition of India, this is of the utmost importance.

It is not for me to criticise the financial position of the Government of India. But he that runs may read from the policy that is now being pursued that ere long a stage will be reached when those that hold the strings of the imperial purse will find themselves face to face with bankruptcy. With an area ten times as big as the British Isles and with nearly five times as much of population, our revenue stands at Rs. 120 crores of which exactly half goes out for military expenditure with every prospect of increase. And now a policy of borrowing is being carried on and what with paying off earlier loans and with the sinking fund, working expenses and interest, how much of the balances of the revenues will be reduced by the amounts that have to be paid in the near future on these accounts is a matter for the financiers at Delhi to discover.

Every Province feels hard-pressed to make the two ends meet, while Provinces like Bengal go out with a minus balance in their budget and yet these Provinces are also borrowing and what their financial position would be at the end of ten years if this state of things continues, heaven only can disclose. Our own Province after giving up an optional expenditure of Rs. 150 lakhs and after effecting a retrenchment of Rs. 54·81 lakhs by reducing existing services, will have to borrow, or raise

by fresh taxation a sum of Rs. 176 lakhs to meet a rigidly estimated obligatory expenditure of Rs. 1,329·44 lakhs. How are the revenues to be repleted? No Province is willing to tax itself and for our own Province the Legislative Council is filled with land-owning classes—at least they are returned by landholders—and taxing the land is out of the question.

IMPERIAL PREFERENCE.

Great Britain imports raw materials with a view to work upon them in her factories and to export the same as manufactured goods, so any preference to her Dominions need not count. But the imports into India are mostly manufactured articles and are consumed here. We do not, therefore, gain any advantage by preferential tariffs. This need not mean that we should tax on all articles from all countries alike. I do not mind giving preference to British and Colonial goods provided our revenue does not suffer and our industrial development is safeguarded.

While we agree even to this small extent to adopt Imperial preference, we cannot ignore the part which Germany played in our trade and what effect any Imperial preference on our part would have upon our trade with that country. There can be no denying that Germany is or rather was one of the best customers. To exclude German goods and even Austrian goods would mean a heavy burden upon the people of this country. Much as we may hate these countries for the part they took in the Great War, industrially and economically speaking, it would be almost impossible for India to cut herself off from them. Even England to-day is said to be veering round Germany. If private information can be relied on, it would appear that England is prepared to make concessions in the matter of recovering her debts from Germany. While English ship-building labourers are idle, it is said that many English ships are seen in German dockyards undergoing repairs. Any policy of Imperial preference therefore will have to be so shaped as not to altogether exclude German goods into India or Indian exports to Germany.

HOW FAR CAN INDIA GO?

The only way in which India can give preference to England appears to be this. Take the articles which could be manufactured or produced in this country. Such articles must

* Part of Evidence tendered before the Indian Fiscal Committee.

be completely protected and this protective duty must be common as against Great Britain as well as other countries. As regards the other articles, certain amount of tariff should be raised for purposes of revenue. But an additional rate might be added when these latter goods happen to be foreign goods. Certain goods of Great Britain and her Colonies would thus receive a certain amount of preference.

These articles should receive a pretty high tariff which would protect Indian industries which can be manufactured or produced in India. On the remaining articles an ordinary tariff for revenue purposes will be levied with certain preference to England and her Colonies.

WHAT INDIA WANTS.

The conclusions to which I have arrived may be stated broadly as follows:—

(1) India wants to have a national commercial policy with special tariffs.

(2) India does not want free trade.

(3) India cannot afford to adopt Imperial preference, save when Imperial imports are smaller in quantity than foreign goods and save when the articles concerned cannot be produced or manufactured in India.

(4) India wants protection to a considerable extent.

(5) India wants a pretty high tariff for purposes of her revenue as much as for the encouragement of Indian industrial development.

(6) India wants to impose high tariffs on manufactures which are made in other countries from raw materials exported from this country.

(7) India wants to impose a reasonable tariff on articles which she can produce or manufacture in this country, but owing to various causes, especially want of efficient machinery, she has not been able yet to make or produce as cheaply as those of other countries.

(8) India does not want to place any tariff upon import of raw materials for intermediates which she requires for her manufactures or upon machinery and other requisites for her industrial development.

(9) India wants to impose a small export duty on her foodstuffs, on exported raw material of which she holds monopoly or nearly a monopoly, and upon raw material which is taken from this country to other countries manufactured and brought back and imported into India as finished articles, as also a prohibitive tariff upon the export of manures.

(10) India wants to give preference to articles produced or made in the British Empire so long as they do not clash with Indian interests.

It is no rabid protection that I advocate. Any such thing might spell ruin to our country. Each article will have to be examined with reference to our production, its export to foreign countries, the need for the same article in those foreign countries, for what purpose the article is used in those countries, and what the effect of retaliation will be on our production. All these and many more considerations enter into a discussion in arriving at any conclusions. Caution of the utmost kind is necessary.

Fuel Research.

In no direction is the movement for Economic methods being more pressed than in the matter of fuel. In Great Britain the coal-mining industry has now done nearly all it can to cheapen coal production and her economic and social welfare seems likely to depend more and more on the effective and cleanly use of coal. A Fuel Research Committee has been appointed to investigate the question in all its bearings. The interest taken in the subject is further evidenced by the appearance of a new magazine, 'Fuel,' which deals in a practical and scientific way with the results of expert research. Meantime in Germany the problem has been tackled from a different side—and successfully too, if one is to give full credence to recent Berlin reports. In their efforts

to manufacture high class fuels from raw materials of inferior quality German chemists have turned to peat and the claim is made that by a process, at present kept secret, pending the application for patent rights, the transformation of peat into artificial coal of relatively high heating value can be effected within less than a couple of hours. One advantage claimed for the process is that the new fuel is produced from wet peat so that the reduction of peat to coal may become a winter as well as a summer industry. The artificial fuel, called "gas coal", has a heating power of 7,500 thermal units, burns with a long flame, can be kindled without any additional lighting material and leaves only a light powdery ash.

The Educational Ideal and System.*

By Principal Thickett.

Many of us feel that the time has arrived when an earnest effort should be made to organize the educational profession so that in all matters of common educational interest united action may be taken. This is a reason of our meeting here this evening. We shall doubtlessly continue this gentle practice of quarrelling amongst ourselves but where educational principles and ideals are concerned, it is incumbent upon us all to work in harmony.

The educational system under which we work is being adversely criticised from all sides, both from within and without and it is high time that we, as educationists, set to work in earnest, not to defend it but to find out what is really wrong. Many find difficulty in assigning to the several factors in the system their true measure of importance. The great fault lies in our perspective which seems to be distorted to a fatal extent. The centre of interest in any educational system based on true principles is obviously the child or student. What the chief interest is in the system under which we work may be debatable but it most certainly is not the child.

To some educationists examinations are more important than boys and girls. What do children exist for, if not to be examined? To such persons the solution of all educational problems is to be found in "aggregates" and "pass marks". Many believe that office work and reports are of supreme importance. An efficient clerk often counts far more than a good teacher in making the reputation of a school and a headmaster who submits his annual returns correctly and punctually may rest contentedly in the knowledge that he has done a good year's work. For such the minimum will doubtlessly arrive when every possible activity is governed by regulation.

The superior officer too often receives far more attention than is strictly his due. It seems to be more profitable for a teacher to study the whims and prejudices of such an officer than the character and capacities of the child or student entrusted to his care, and this is true for all grades, whether the teacher is working in a university college or village primary school. Teachers complain, and with good reason, that the way to approbation and reward does not lie in the direction of con-

scientious teaching and the result is they find little joy in their work. To others again buildings, or it may be curricula or text-books or appointments, are of more value than children. For other factors, look through the education code and in your leisure moments try to decide what the dominating interest of the system really is.

One of the greatest hindrances to healthy educational life here is a widespread endemic disease. It is usually called "dignity" but specialists would probably diagnose it as pride and false pride at that. The remedy for it is not yet discovered but a few injections of horse sense would probably give relief. We all know the symptoms; the dignified head who can be approached only through request and the dignified teacher who cannot carry a book or move a black board without loss of prestige. But the dignified administrative officer is beyond hope.

All this myopic vision and misplaced emphasis on subsidiary factors simply means that we have not yet seen the light of true educational principles. We are groping in the dark but to make others believe that we know the way, we follow the path of compromise which, with all its unhealthy expedients, and personal considerations, often called opinion, is leading us far from the right path of true educational progress, and if the blind lead the blind, both shall fall into the ditch. The "Sit-stillery" conception of the educational process dominates the system under which the work and this conception along with its companion "Docility" is essentially evil. A system which produces year by year a large number of graduates who do not read, are not self-reliant, and in whom the spirit of enquiry is dead, is obviously unsound. Take the six-year old boy when he first comes to school, bright, cheery, confident and full of the joy of life and set him beside the eighteen-year old, joyless, timid, and oppressed by life's burdens. Surely it is not impossible for us to bring about a change.

It is high time for us to bestir ourselves and to set about getting out of the ditch into which we have fallen. Open confession is good for the soul. Let us frankly admit our ignorance and set out on a voyage of discovery. It may be that we shall discover a more fertile region in which our efforts will be rewarded with a rich harvest. We may possibly awaken

* Address delivered at the inaugural meeting of the League of Educationists held in Patna,

to the fact that education is a wider thing than the work done in schools and colleges, that it is really a part of the life process itself. The chief educational influences arranged in order of value are first the mother, then the family, with companions and teachers competing for the third place. Some administrative officers are very great persons indeed and find much self-satisfaction in describing teachers as subordinates. But the teacher is in close touch with the child and for this reason his work is on a higher plain than theirs. In the scale of educational values, an administrative officer and examination may very well be bracketed together near the bottom, both are necessary evils.

A new spirit, manifesting itself in bold and enterprising experiments is vigorously at work in the schools of the West. The Boy Scout Organization and the Montessori System are two of the movements in which it finds expression. That this spirit is not entirely absent from India is proved by the inspiring little book recently issued by the Oxford University Press called "Schools with a Message for India" and we ourselves have seen "Scouting" activities in the vicinity in the last few weeks. This new spirit promises to revolutionize modern educational systems. All stages of the educational process from infancy to higher degree teaching are affected, and its influence may be seen in many parts of the educational field. One marked feature is that emphasis is being shifted from knowledge to activities, and self-directed and self-controlled activity seems to be one of the underlying principles. There is a general awakening to the fact that knowledge alone is inadequate as a means of education. A learned person may prove to be a very futile member of society, for life after all is wider than knowledge.

Information about experiments in the region of W. Elementary and Secondary education will be found in books like "A Path to Freedom in the School," "The Play Way," "Educational Experiments in England" and "The New Era in Education." From a recent number of "Indian Education" we learn that Sir Arthur Quillar Couch voiced the new spirit the other day when he gave a warning to undergraduates at Cambridge about the unwisdom of being intemperate in the pursuit of lectures. "Choose your lectures," he said, "and choose a few only. Choose those which will turn you on to reading for yourselves. It is no hoard of knowledge that you need. What you want is a harder thing to find, trained capacity. Lectures are worth very little in comparison

with private and personal conversation or with the teaching given in informal classes."

Such advice will doubtlessly shock the sensibilities of those who measure the efficiency of a professor by the number of lectures he gives, or the intellectual fitness of a student by the number of lectures he has attended. Mr. E. N. Slesson in his book, "Great American Universities" says: "As it is, the professors give too many lectures and the students listen to too many or pretend to; really they do not listen, however, attentively and orderly they may be." The same writer also says: "One of the unfortunate results of the lecture system is that the professors get so used to talking that they cannot stop. (We shall, I think, find no difficulty in agreeing with Mr. Slesson but we may cherish the hope that the discovery of a remedy for logorrhoea will shorten the hours we spend in committee meetings.)

What is really happening is that the time-honoured system of class teaching is undergoing a process of rapid disintegration, because the fallacies inherent in it are now made manifest. It is difficult to understand why such a Procrustean System has held sway for so long. The problem of college teaching seems to be centering in the right use of libraries and the accessibility of Professors. The way got at the efficiency of a college is not by a costly visit of inspection and a long report which few read through but by estimating the accessibility of the staff and the intercourse between them and the students. The nearer college life approaches healthy active family life in its arrangements, the nearer it is to the ideal. This is the great secret to be learnt from Cambridge. It is also the mainspring of missionary influence. (I heard the other day that a certain professor in a certain college was seen conversing with one of his students. You will of course keep this information strictly confidential.)

There is now a clear recognition of the function of the lecture and lesson. As methods for conveying information they are being discredited. In the colleges and schools of the future they will be used only for purposes of demonstration and inspiration. The new spirit of active "auto-education" will not be passive recipients of information but active enquirers after knowledge and libraries will be their workshops. Professor Percy Nunn writes: "The ideal of a course laid down in advance for all pupils, with their achievements mapped put a head for each session, term and hour, must give place to an ideal of progress more elastic and more closely related to the ways

of mental growth. Individuals must be allowed to go more their own way.....The new teaching demands a Copernican change of stand-point; one from which the individual."

An era of vigorous educational reconstruction lies before us and we should be wise to pave the way for it by experiments on many and varied lines so that the best line of advance may be discovered. This is what is being done in England. We have strayed into a blind alley but by means of experiments in many directions we shall find the broad highway. Kappa in his book "Let Youth But Know" writes: "I am in cordial agreement with the writer of the Upton Letters, who says: "What I want is experiment of every kind but my cautious friends say that one would only get something a great deal worse". That I deny. I maintain that it is impossible to have anything worse, and that the majority of boys we turn out are intellectually so negative a condition that any change would be an improvement."

Educational theorists seem to have been on the wrong lines in the past trying to make all students conform to one ideal type. As Professor Adams in "The Evolution of Educational Theory" shows, Milton had in view the country squire of the commonwealth period; Locke, the country gentleman, Mon-

taigne, the fine gentleman; Rousseau, apparently a French lady, Pestiozzi, an intelligent and contented peasant; and Herbert Spencer's education is meant for the offspring of the well-to-do. In the future, educationists will probably not concern themselves so much with an ideal type as with the provision of suitable opportunities for each child to develop its own inherent capacities. There will in fact be not one ideal type but many. With this new spirit in education to inspire us, let us then consider where we stand, let us give our real service to guiding the unfolding personality of the child in the realization of the good, the true and the beautiful. Let us acquire a more alert of enquiry and cultivate a wider outlook; let us find the principles on which all sound educational systems are based and which are true for all time, all countries and all classes, and let us also define the ideals which animate all genuine workers in the educational field. In these principles and ideals, we shall find the bond which brings us together for united action and for the formation of league of educationists. The activities of the League will doubtlessly, at first, be confined within the limits of this province, but some of us look forward to the time when an All-India League will be formed and beyond that again to an International League of Educationists.

Educated by Your Finger Tips.

If you had never seen a desk or a blackboard, if you had never seen a book, if you could not even hold a pencil and write without the aid of a complicated arrangement of sliding grooves, would you think a college education worth all the effort it called for?

Blindness means all these handicaps and many more. Yet two absolutely sightless girls, proteges of the New York Association for the Blind, are not only carrying on all their regular college work with sighted pupils, but they are listed as honor students. How do they do it? asks the American "Educational Review."

Beatrice Holtzer, the first, who is now a sophomore at Cornell University, has been coming to the Lighthouse Saturdays and afternoons after school ever since it was started ten years ago. At the Lighthouse she had access to the Library in Braille raised type. She also found there her opportunity for recreational activities of all kinds, which it was difficult for her to learn with the sighted pupils, folk-dancing, calisthenic drill and

dramatics. But with these two exceptions her school life at Wadleigh High School was like that of any girl with two eyes instead of ten seeing fingers. And what is more, she entered college with three scholarships.

Of course, no blind person can carry on any higher study without the help of a reader; that is, a person who is ready to read from text-books and reference books not accessible in Braille. But in reality this obviates only a very small part of the difficulty. To be successful a truly remarkable development of the memory is necessary. Beatrice Holtzer has so trained her memory and her powers of concentration that she never needs to hear anything read more than once to be able to make a report on it.

She never takes a note in class. A special Braille machine for this purpose has been devised, but the girl noticed early in her college life that the little click of the machine annoyed the other pupils. Since then she has written up all her lectures outside the classroom, and her term notebooks are just

as accurate and just as full as those of the sighted pupils.

To those of you who have known the terrors of "freshman math," it may be interesting to learn that Beatrice Holtzer has safely weathered the storms of Algebra, Geometry, and Trigonometry with almost no help from the printed page. Text-books are, of course, prepared in the Braille and for Geometry little triangles and circles outlined in dots are sometimes provided. But for this student, both these devices are a hindrance rather than a help. Her wonderfully retentive memory is her text-book. She prefers what she calls "visualizing," and sitting with folded hands, she will carry in her mind the most complicated mathematical problem, once it has been read off to her, and solve it step by step with almost never a slip.

Beatrice Holtzer is specializing in languages, a subject for which her unusually acute hearing has admirably fitted her. It is her ambition not to teach among the blind, however, but to teach such a high standard of work that she can teach in a high school or college with sighted pupils.

Hazel Crossley, another Lighthouse "graduate," attended Wadleigh High School, and now is enrolled in the Kindergarten Department of Hunter College. Miss Crossley's ambition is to be a kindergarten teacher for the blind, but her training is in every way identical with the training of the sighted teachers. She too has literally grown up with the Lighthouse and through that institution received her fundamental training in all that hand work which is so big a part of the kindergartner's skill. In the Lighthouse classrooms, Hazel Crossley early learned hand and machine sewing. She learned weaving and basketry. And so thoroughly has she educated her fingers to work without eyes that her sample book of worsted and folded paper articles such as is made in every kindergarten school, received a very high rating at the mid-year.

Miss Crossley has studied voice and piano. She is an enthusiastic dancer and still takes part in the dramatic performances given every year at the Lighthouse. Her reader is furnished by that institution, and every afternoon she makes the trip to her home entirely alone, although it is a distance of more than a mile through crowded streets.

This work among the younger girls is only one phase of the life at the Lighthouse. For the adult men and women, regular work-

shops are maintained where by means of hand and machine sewing, basketry, chair caning and weaving, many of the sightless are enabled to become self-supporting. A large gymnasium, bowling alleys, and swimming pool also provide for playtime.

The New York Lighthouse is the work of Miss Winifred Holt, who has devoted the last fifteen years of her life to the sightless. During the past six years she has been engaged as director of the Committee for Men Blinded in battle, in France, and the American Committee for Helping Italian Blind, in Italy. In order that industrial and educational opportunities for the blind may be extended, the Committee for Lighthouses for the Blind has been organized under Miss Holt's leadership and is seeking a fund of \$2,000,000 for use in this country, France and Italy.

According to cabled information received by the Standard Bank of South Africa, Ltd., iron and steel are in fair demand in the Union and engineering work is increasing. German competition is being felt. There is an improved inquiry for electrical goods; German quotations are considerably below those of British firms. Sales of motor-vehicles at lower prices are improving. Local boot factories are again working full time and have satisfactory orders on hand.

Legislation will be initiated by the Government of Jamaica at an early date to prohibit the importation and use on public roads of the Colony of heavy lorries weighing more than 12,000 lb. gross when loaded. The roads are not suitable for heavy fast traffic. An appeal has been made to planters, merchants, and others not to import any vehicle which weighs more than 6,000 lb. in running order without a load. It may be necessary to prohibit the use of heavy lorries now in the island.

Our correspondent in New York reports that the Baldwin Locomotive Works has made a loan of \$13,000,000 (£3,250,000) to Argentina. The whole of this amount has already been placed in the United States and in the form of contracts for locomotives freight and passenger cars. This loan is independent of a loan of \$50,000,000 (£12,500,000) which a group of bankers is expecting to make to Argentina in December.

Efforts are being made in Jamaica to interest English capital in the development of the salt industry in the island.

Madras Committee on Industrial and Technical Education.

At the Meeting of the Legislative Council held on the 15th November 1921, M.R.Ry. S. Arpudaswami Udaiyar Avergal, M.L.C., moved the following resolution:—

“That this Council recommends to the Government that the following provision be made for secondary education:—

1. That two kinds of schools be opened for secondary education

- (a) technical or commercial schools and
- (b) secondary schools properly so called.

2. That each kind be divided into first and second grade schools—

(a) First grade technical schools should provide the country with trained labour, tradesmen, shop-keepers, weavers; the course for this grade should last three years and include not only apprenticeship in arts, trades, industries, but also such instruction in the Vernacular and English, Arithmetic, Mensuration, History and Geography and Drawing and modelling as will make the pupils worthy and useful citizens; a syllabus should be drawn up and approved for this course;

(b) Second grade technical schools should provide the country with highly skilled and artistic labour; foremen for workshops of all kinds, especially of workshops for the production of the highest forms of industry and trade articles; the course for this grade should last three or four years and the syllabus should also include such instruction in languages, History and Geography, Mathematics, and Science as will make the pupils worthy citizens and men of sound knowledge and information;

(c) First grade secondary schools should provide elementary school teachers, clerks, for the lower offices in the service; a syllabus should be drawn up and approved for this course;

(d) Second grade secondary schools should prepare candidates for the higher studies in the University, or in the highest grades of the professional colleges; no syllabus; headmasters and managers should be required to determine the course of studies, but an examination should be undergone at the end of the course as a test of fitness to proceed to the University or professional colleges.”

In the course of discussion the Hon'ble Rao Bahadur A. P. Patro, Minister for Education, pointed out that the second part of the resolution was included in the scope of reference

to the Education Reorganization Committee recently appointed by the Government and that the mover being himself a member of that Committee should bring this part of his resolution to the notice and attention of that Committee. As regards Industrial and Technical education as distinguished from secondary education and also from vocational education and manual training the Hon'ble Rai Bahadur K. Venkata Reddi Nayudu, Minister for Development, agreed on behalf of Government to appoint a committee to examine the whole question and submit a comprehensive scheme for an organized system of Industrial and Technical Education.

In pursuance of the undertaking then given by the Hon'ble the Minister for Development, His Excellency the Governor is pleased to appoint the following Committee of officials and non-official gentlemen subject to their consent to serve:

1. Mr. M. E. Couchman.
2. „ W. Fyfe.
3. „ C. W. E. Cotton, C.I.E., I.C.S., M.L.C.
4. „ R. Littlehales, M.L.C., Director of Public Instruction.
5. „ W. H. James, Principal, Engineering College.
6. „ Mr. A. F. Buchanan, Messrs. Parry & Co.
7. Rev. B. Rottscheaffer, Industrial School, Katpadi.
8. Mr. P. G. Porteous, Loco and Carriage Superintendent, Perambur.
9. Sir P. Tyagaraya Chetti Garu, M.L.C.
10. M.R.Ry. C. Ramalinga Reddi Avl., M.L.C.
11. „ M. Krishnan Nayar Avl., M.L.C.
12. „ A. Arpudaswami Udayar Avl., M.L.C.
13. „ T. C. Srinivasa Ayyangar Avl., M.L.C.
14. „ A. Subbarayadu Nayudu Garu, M.L.C.
15. „ R. T. Kesavulu Pillai Avl., M.L.C.
16. Mr. H. M. Ibrahim Sait.
17. M.R.Ry. L. K. Tulasiram Avl., Madura.
18. „ A. L. K. Somasundaram Chetti Avl.
19. „ M. Chengalvaroya Chettiyar Avl., Tondiarpet.
20. „ Y. Ranganayakulu Nayudu Garu.

Mr. M. E. Couchman will be the President of the Committee and Mr. Fyfe will act as Secretary. The Committee will have power to co-opt additional members.

Another committee has recently been appointed for the purpose of revising the scheme of Government Technical Examinations. The Government trust that the presence on the Committee on Industrial and Technical Education now constituted of several members of the Committee dealing with the technical examinations will ensure co-ordination between the labours of the two Committees.

Broadly speaking, the object of technical and industrial education is, in the view of Government, to supply—

(1) a force of skilled labourers is organized as well as cottage industries;

(2) the inferior directing agency required for controlling that labour such as foremen, managers of workshops, technical assistants, and superintendents, etc.

(3) the superior directing agency, such as chief engineers, factory managers, etc., and

(4) expert chemical and other advisers for purposes of scientific research as applied to industries.

The Committee will inquire into the present equipment of the Presidency in these respects and will draw up a comprehensive scheme for an organized system of industrial and technical education to meet the needs of the present and the reasonably near future. They will, in particular, advise as to the following topics:

(1) whether control of existing and future institutions for technical, industrial, engineering or commercial education should be centralized in the Department of Industries;

(2) the establishment of a technological college, and of a research laboratory;

(3) the grades or classes of institutions (classes, schools, or colleges) whose establishment they may recommend including, if necessary, special schools for particular trades or industries or branches of these.

(4) the curricula for these;

(5) to what extent general educational qualifications, or the possession of a special mechanical aptitude is to be required as a condition precedent to admission into the various classes of institutions.

(6) to what extent industrial and technical instruction should be imparted in the ordinary schools for general education, and should qualify for admission into the special institutions to be created:

(7) the question of introducing a system of apprenticeship;

(8) the industrial and technical education of girls and women;

(9) the training of teachers for industrial and technical institutions;

(10) the question of the grant of technical scholarships within or without the Presidency and the conditions of such grants;

(11) an estimate of the initial and recurring expenditure to be incurred on the measures recommended, to be spread over a reasonable period of development, say ten years;

(12) the extent to which local bodies should share in the expenditure contemplated;

(13) the extent to which factories, workshops or other industrial concerns can be expected to render assistance or to bear expenditure;

(14) the legislative measures (if any) required to give effect to the proposals of the Committee.

The field of inquiry is a wide one and the Committee will have power to constitute sub-committees to deal with particular subjects or groups of subjects.

The Committee may invite persons to give evidence written or oral. The Committee will meet in the Committee Room, Fort St. George, and the Secretary will arrange dates in consultation with the President of the Committee.

Safflower (*Carthamus tinctorius*) is widely grown in India chiefly as an oil seed. The oil is "one of the most valued of edible oils, and the oil-cake when prepared after thorough decortication is one of the most valuable cattle foods, etc." The Agricultural Research Institute at Pusa, India, have been conducting experiments on the commercial possibilities of this oil, the results of which have been embodied in their Bulletin No. 124, recently issued. It contains a report of the experiments conducted in this country by Mr. J. Stewart Remington, Consulting Chemist, Aynsome Technical Laboratories, Grange-over-Sands, Lancashire. He concludes as under: "Safflower seed oil should become a very valuable economic product if it can be only brought over and utilized on the home markets. It should be an excellent oil, if properly manipulated, for the colour, paint and varnish industries, also for soap and linoleum manufactures; as well as for edible and culinary purposes—in the latter case if proper means are devised as regards refining and bleaching.

Canadian Trade and Finance.

Montreal, 1st April, 1922.—A more optimistic feeling is apparent in the reports from all parts of Canada on business conditions. In the eastern provinces, particularly, is this the case. Here, in spite of the fact that inactivity in some lines still persists, the general outlook is improving, and it gives promise of betterment as the spring advances. A fairly large number of manufacturers are experiencing a slight revival in business, the impetus of which is extending, in some measure, to the wholesale and to the retail trade. In the West the movement is not so pronounced but here, too, there is some ground for encouragement, so that taking it by and large it would seem that a return to somewhat more normal conditions in trade is looked for throughout Canada. But the present period is one of transition.

MANUFACTURES.

Taking the country as a whole, there seems to be justification for optimism in certain branches of industry. Plants are, of course, operating at less than full capacity in most centres. Some concerns, however, which had considerably reduced staffs are bringing the office and plant forces nearly to normal. Orders were extremely few during February, but a much better showing was made in March. Stocks in many lines are almost depleted, and this fact augurs well for renewed activity in the near future.

Reports on the paper trade throughout the Dominion show some signs of improvement. It would appear, from the statements of jobbers and manufacturers, that the future outlook as to prices is favourable. Orders for book papers, fine papers and Kraft already show improvement; but very little activity is observable in the pulp market.

Concerning the lumber industry very little favourable comment can be made at the present time. On the Pacific Coast, the Japanese demand has not increased as was expected. To some extent this is due to the fact that the Japanese Government, in the endeavour to keep down importing, has placed restrictions on Letters of Credit issued by the Japanese banks. Owing to the lack of demand in the British market, quietness prevails, for the most part, in the East also. The American market, however, still offers some outlet for lumber both in western and in eastern Canada.

FOREIGN TRADE.

A survey of the recent trade figures of

various countries discloses the fact that a decline in trade was not confined to Canada only. In the year that has passed, all the important commercial countries have had the same experience. The process of deflation has had the effect of decreasing trade figures by a very large percentage, in some instances, when the quotations are expressed in terms of money value.

The importance of the factor of falling prices must not be lost sight of in connection with trade statistics. Since our Canadian trade figures are reported in terms of dollars rather than in terms of physical volume, it is necessary, for accuracy, to take into account the price level. Let us consider, for example, the trade of Canada for the two years ending January 1921, and January 1922 respectively. The total foreign trade during the first of these periods was valued at \$2,568,815,296, and that of the second period at \$1,560,560,620. This is a falling off of \$1,008,254,676, or 39 per cent. A part of this decline, we must remember, was due to receding prices. It is difficult, or impossible, to estimate accurately what percentage of the decrease was due to that factor, but a clue at least lies in the fall of the index number of prices during those two periods. Taking the mid-point of the two years, namely, July 1920 and July 1921, we have a drop in the index number (Department of Labour Index) from 346 to 238, which is a decrease of approximately 31 per cent. It is not argued, of course, that there should be an absolutely accurate ratio between the trade figures and the mid-point index number, but the comparison at least is suggestive.

EMPIRE TRADE.

In our last issue, brief reference was made to the effect of the United States Emergency Tariff on Canadian trade. It was suggested that the immediate effect would be to divert an increasing amount of Canadian goods to Europe and elsewhere, especially, perhaps, to the United Kingdom. This is borne out by recent figures. In the twelve months ending January 1922, Canadian exports to the United States fell off to the extent of 43 per cent. in comparison with the previous twelve months, but exports to the United Kingdom dropped less than 10 per cent. The difference is significant, and is, of course, still more marked if we consider only the months since the enforcement of the Emergency Tariff. It is evident that artificial barriers such as

the Fordney Tariff have the effect in the long run not of lessening our exports, but merely of diverting their flow to other markets. These markets are being found, and negotiations are already under way for furthering the tariff preference between the various units of the British Empire. Those Canadian products which are in demand in the United States will continue to be sold there, while it is probably to our advantage that we are obliged to find markets elsewhere for our goods that in the past merely have competed with similar American products.

NATIONAL DEBTS.

The close of the year 1921 witnessed a further increase over the previous year in the funded debt of the Dominion of Canada. On December 31st our Government's net outstanding obligations amounted to \$2,366,861,252. In the month of January of the present year there was an increase of about sixteen millions, but a reduction of \$700,000 was made in February. The rapidity of the increase during the last six years has been marked. In 1916 the debt stood at a little over 615 million dollars. By 1918 it had passed the billion mark, and by 1920 it exceeded two and a quarter billions of dollars.

It is interesting to compare the national debts of a few of the leading commercial countries, as they stood in 1914, and as they stood at the most recent date for which figures are available. The figures below are quoted in millions of dollars, conversions being made at the pre-war par of exchange.

	1914	1921	
Great Britain ..	3,165	37,520	
United States ..	1,190	23,977	
Canada ..	483	2,366	
France ..	6,291	48,205	
Germany ..	1,126	71,007	
Belgium ..	722	4,706	
Italy ..	2,621	18,928	(1920)
Japan ...	1,292	1,397	(1920)
Argentina ..	645	968	
Brazil ..	1,025	1,580	

CONSOLIDATION OF BRITISH INDUSTRY.

During recent years, British industry has been experiencing a development which promises to be of no little importance in the future industrial expansion of the United Kingdom. This is a movement towards consolidation and amalgamation.

The history of the development of British industry stands out in marked contrast to that of the other important commercial nations, especially of the United States and of Germany.

The policy of the German Government was not only to tolerate the development of the *Kartel* (trust), but it was a policy of encouragement and assistance to large corporations. In the United States, on the other hand, the Sherman Anti-Trust Act of 1890 and the Clayton and Federal Trade Commission Acts of 1914 have shorn the corporation of the ability to carry on that type of business which the courts interpret as being "in restraint of trade".

In the United Kingdom, until very recent years, mammoth concerns such as those which existed in the United States and in Germany have been unknown and, consequently, either prohibitive or regulative legislation has been unnecessary. Soon after the beginning of the present century, however, a tendency towards amalgamation was evident in a few isolated cases. By 1910 the movement had taken definite shape. The unlimited opportunity for the expansion of enterprise in the early years of the century, and the fear of foreign competition, as the United States and Germany gradually came to the fore in world trade, led to the formation of trade agreements and pools and later to out-right amalgamation. The progress of the movement was somewhat retarded by the war, in its earlier stages, but the reverse situation was true later. Since the Armistice it has proceeded more rapidly than ever. It is important here to note the attitude of Great Britain towards this new development. The Government has never opposed it in any way. No prohibitive or even regulative legislation has ever been introduced in the British Courts; instead, the common law is deemed to have sufficient control over trade agreements and contracts of any sort. Combinations, as such, are in no way penalized, and the freedom of contract is held inviolable.

A brief survey of the present situation will serve to illustrate what has been said. In the last two years a large number of British companies have increased their capital for the purpose of buying out allied concerns. One manufacturer — and this case is not at all exceptional — has added about £20,000,000 of new capital to extend his operations and to develop the undertakings of allied companies. The economies of united action and of centralized control are obvious. The large concern is able to employ experts, and to carry on research; it is in a position to obtain patents and to utilize its by-products to advantage. By means of these, and of a dozen other economies of large scale operation and of 'vertical combination', or control over all branches of a single industry from the raw material to

the finished product, a better and cheaper article can be produced. Thus Britain is in a better position to supply her domestic market, and is also better equipped to meet foreign competition. Consolidations are common in the iron and steel trades as well as in oils and explosives. Absorptions of the smaller concerns by their more powerful competitors are not rare. In the railway field, we have information of the proposed union of two important lines; and it is common knowledge that the cocoa and the chocolate industries are a monopoly controlled by three Quaker families. In the banking field, the movement towards consolidation is perhaps more pronounced than elsewhere. Since the beginning of the century the number of banks has decreased from more than a hundred to half that number, of which some half dozen have grown to gigantic proportions. The necessity of financing the war greatly accelerated this movement.

No argument is needed to establish the fact that Great Britain has benefited very materially from the strength of these half dozen large banks, during the period of the last few years. The world has looked with wonder on the almost miraculous way in which Britain has summoned every unit of her energy to the mighty struggle for recovery. The importance cannot be exaggerated of an asset such as this—of having the financial strength of the nation concentrated in a few powerful institutions, rather than having it scattered among fifty different organizations.

Thus, in practically all branches of British industry, of British commerce and finance, recent years have witnessed a profoundly important departure from the old small-scale business organization to the centralization of capital and control, resulting in the birth of mammoth corporations which promise to rival in size and strength the much older concerns of the United States and of Germany.

Japan and Middle East Trade.

A Correspondent writes to the "Times" Trade Supplement"—During the war traders in the Middle East were deprived of their European and American connexions to a very great extent, and they were compelled to look for new markets. As a natural consequence the small factories of Japan, Australia, and India obtained orders beyond their wildest dreams. Rush work did not improve the quality of their products, but, still, orders were executed, money was earned, old factories were rapidly extended, and new factories, especially in Japan, grew like mushrooms on all sides.

All the new manufacturers realized the immense richness of the markets so close at hand and so much neglected for want of enterprise in the past. Then, with the end of the war and the gradual re-entry into business of the experienced European and American manufacturer, came lean times, for people would not buy shoddy, indifferent goods at high prices when they could buy good material. Now Japan, India, and Australia have realized the position and have determined to strengthen and lay a lasting foundation to their war connexions with quality, better shipping facilities, trade bureaux, and commercial museums.

A party of Japanese merchants, who studied

trade possibilities and secured orders upon a large collection of samples, traversed India and passed through Colombo recently. Their mission has been exceedingly fruitful. Their samples, also the many different kinds of wear now exhibited in the Colombo-Japanese shops, are vast improvements over Japanese war-time products. It is from the low-grade, cheap Japanese articles manufactured especially for the Indian and Chinese markets that Ceylon has hitherto drawn her supplies. Some goods of the better class now exhibited at Colombo-Japanese shops are moderately priced. Japan's steamship services are being strengthened. Her trade bureaux hold up-to-date classified lists of reliable foreign buyers of different kinds of manufactured and other goods. She will not be beaten back from the extensive Middle East markets she captured in the war period. The Colombo-Japanese shops, which hardly advertised in pre-war days, are to-day in the forefront of advertisers in the local Press. Their trade is growing steadily.

INDIAN PROGRESS.

In India, in the past few years, industrial activity, especially in the production of soap, iron goods, and cloth-ware, has developed to a remarkable degree. Of soap large quantities are now being made at many places for

home consumption and for export. The Kevala Soap Institute at Calicut, an Indian-made plant, is turning out caustic soda. The same concern has recently ordered from England a glycerine manufacturing plant. The recovery of glycerine from soap residue will naturally increase the profits of the concern.

Except in the case of calico-printing, which India has not yet developed to any great extent, all other departments of the calico goods trade may now be said to be firmly in her hands. Germany has definitely lost her large Indian and Ceylon coolie-blanket trade of pre-war days. To-day Bombay sends her cotton blankets of various grades which upon quality and price could not be beaten by any American, European, or Japanese manufacturer. The Elgin Mills and the Muir Mills of Cawnpore now advertise here largely and do a large trade in a range of coloured and bleached cotton and woollen goods of first-class quality. A Kashmir firm advertises good tweeds in Colombo at something like Rs. 2 per yard!

The hydro-electric power available in India at the moment is being used to the utmost by cloth mills and iron foundries. Cloth production is bound to expand very materially once the new hydro-electric schemes planned are completed.

AUSTRALIA'S OPPORTUNITY.

The Australian leather firms have agreed to try a co-operative method of canvassing by agents. Their handbags and portmanteaux sold here are of excellent quality, but their footwear has not the fine finish of British and American material. Australian jams and jellies, very good in taste, are badly tinned and labelled. A stronger tin should be used to prevent damage and leakage in transit; the labels should be improved. In the case of bottled jams and jellies and sweets the rubber washers used in connexion with top covers should be more substantially made, so that moisture is excluded. Beef should be better compressed, tinned, and labelled. Ceylon imports about 70,000 lb. of different kinds of tinned biscuits per annum from Great Britain, as against about 35,000 lb. from Australia. There is no reason why, with more careful preparation of material, tinning, and labelling, Australia should not supply the bulk of tinned biscuits consumed in the Middle and Far East. Australian cheese should be more uniform in quality. The local demand for Australian butter is

growing. If more Australian mutton, sandalwood, soap, potatoes, onions, tanned hides, tallow, metals, chemicals, fertilizers, wines, etc., are not consumed here, in India, and in neighbouring countries it is only due to the lack of well-directed enterprise on the part of Australian merchants. Australian traders must advertise freely and constantly study their markets. Their present trade methods require much improvement. Trade bureaux should be established at important centres.

The following statement showing the comparative monthly cost of an Indian and a European soldier was furnished by Sir Godfrey Fell at a meeting of the Legislative Assembly on the 14th March last :

EUROPEAN			Rs.
Sergeant	married	..	260
"	unmarried	..	204
Corporal	married	..	226
"	unmarried	..	117
Private	married	..	206
"	unmarried	..	150
INDIAN			Rs
Havildar	Infantry	..	52
"	Artillery	..	52
"	Cavalry	..	58
Naik	Infantry	..	48
"	Artillery	..	49
"	Cavalry	..	58
Sepoy	Infantry	..	42
"	Artillery	..	44
"	Cavalry	..	45

The British Guiana Legislature has passed a bill to confirm the acquisition by the Colonial Government of the Demerara Railway Company. The Legislature has, by resolution, granted the Governor of the Colony power to fix the period within which payment shall be demanded from sugar estate owners of the Excess Profits Tax due, but not yet collected, since 1920. The special tax towards the colonization fund is to be suspended this year; and the Legislature has approved of advances by the Treasury of \$150,000 to rice growers to enable them to reap their crop, such advances not to exceed five dollars per acre, the interest to be 8 per cent per annum. In order further to assist sugar planters in the Colony, it is proposed to suspend during 1922 the collection of the tax levied on land under cane cultivation.

Industrial Notes from the United States.

By Alfred T. Marks.

NEW WONDERS OF RADIO TELEPHONY.

Washington, D.C., U.S.A., March 27, 1922.—The United States is much enthused over the new and very remarkable discoveries in radio telephony—and this enthusiasm is rapidly extending into all circles, so that there are, as I write, over 900,000 receiving and transmitting stations, scattered all over the country, with additions approximating 50,000 to 60,000 monthly. As a matter of fact, the ether has become so “cluttered up” with radio music, concerts, church services, lectures, and general conversation that it has been found necessary to call a “radio conference” here in Washington, presided over by the Secretary of Commerce, Herbert Hoover, in order to attempt to bring order out of chaos. This conference adopted a number of regulations affecting all transmitting stations (receiving stations not being concerned, as these merely “listen in”), requiring that these take out government licences to operate and agree to use certain radio wave lengths for certain purposes and under certain regulations as to period of time and hours of the day or night.

The industrial and commercial possibilities of radio are claiming great attention everywhere throughout the country. However marvellous and at present undreamed of may be the developments, and in whatever directions these developments may tend, there seems to be no reasonable doubt but that, through the perfection of processes now being worked out, we are to see a new and mighty force enter into our calculations—a force of whose possibilities we know but little, but which, nevertheless, we cannot afford to leave out of our plans, whether those plans embrace every-day merchandising, the musical activities, educational work, emergency or other communications, or general news dissemination.

In these days, when we are merely “scraping an acquaintance” with the wonders of radio, and finding marvellous new developments almost overnight, we cannot attempt to forecast what the future—even the days immediately ahead—may add to our comparatively meagre knowledge of the subject. But this much is evident, and is already demonstrated most conclusively: We are on the eve of startling new innovations in the winning of publicity of all kinds and for every purpose.

The retailer or general shop-keeper may talk directly to an unlimited audience of eager listeners; if he be a music dealer he can play to them or tell them of the newest phonograph records, the latest talking machine developments, the sweet-toned piano; he may put on a programme of new sheet music “hits” performed by a pianist or sung by a vocalist in his store, and broadcast it to the four winds; he can tell his story, play his instruments, sing his songs, extend invitations to his recitals and concerts—talking all the while directly to his audience, daily growing larger, and which in this country to-day extends from the Atlantic to the Pacific. All of these things are being done now—what we may be able to do in six months or a year hence may still be in the realm of the “impossible” as we look at things to-day. People in Washington, Pittsburgh and Chicago are dancing to the music played by an orchestra in New York; a lecture delivered in St. Louis is heard, word for word, in Philadelphia and New York and all along the Atlantic seaboard; a choir singing in New York is listened to in distant Canadian and far northwest points, thousands of miles distant!

No particular education or special understanding of the radio subject is necessary in either transmitting or receiving; simply the comprehension of the controlling principles and a knowledge of radio fundamentals; the possession of a sending or receiving set (procurable at from \$20 to \$2,000), and one is equipped to participate.

PHONOGRAPH RIVALS MOTOR CAR'S VOGUE.

The development of the phonograph manufacturing industry in the United States during the past two decades has been almost as phenomenal as the expansion of the automobile industry. In the calendar year 1921, 2,000,000 perfected machines were produced in this country. That figure, based on the last census, represents one new machine for every sixty of the population. The production of phonograph records has also expanded rapidly during recent years. Sales of Caruso's records alone have increased 300 per cent since his death.

At the present time it is estimated that there are 7,000,000 phonographs in use in the United States. In the year 1919—the record year—2,250,000 machines were produced by the various manufacturers. In 1917 sales were estimated at 900,000 machines; in 1916 they

were 600,000, and in 1915 about 540,000 phonographs were made and sold.

According to figures just made public there are to-day about 228 manufacturers of the various types of talking machines in the United States. This compares with a total of 341 manufacturers when production was at its peak in 1919, and the demand too great to be satisfied. Of all these 228 manufacturers now producing phonographs in this country not over twenty are nationally known, and not over half of this number are known in foreign countries, these through extensive advertising.

Statisticians connected with the industry estimate that the average purchase of records is about thirty-six to each machine. One of the largest individual collections known to be possessed in this country is that of a New York banker, who is credited with having accumulated 2,500. It is estimated that about 85 per cent of the phonographs are sold on the instalment plan, and about 90 per cent of these buyers complete their purchase payments.

AUTOMOBILE MANUFACTURING NOW SECOND INDUSTRY IN AMERICA.

No industry in the world ever attained such a growth in such a short time as has the automobile industry. Within a period of approximately twenty years it has risen to the second largest industry in the United States.

Should we attribute this phenomenal growth of the automobile industry to the intrinsic merit of the automobile alone? In days gone by other inventions, such as the steamboat and the steam locomotive, which have been as necessary to civilization as the automobile, and as revolutionary in changing men's mode of living, took at least three times as long as the automobile to attain a growth in any measure comparable to the automobile industry.

Most of the epoch-making inventions that have spelled progress for mankind in a large way have grown through painful years of labour on the part of a zealous few. The idea underlying the invention was startling in most cases, and humanity had to be educated up to a point where it had faith in the idea by a slow process, by passing around by word of mouth the strange new idea, and it took a great part of a century for the idea to take root. And no invention or new product has ever been accepted by humanity unless a preponderating majority fully realized the utility and capacity for comfort the new product brought them.

One great dominating factor in putting the automobile "across" in such a short time has been the real sales merchandising, including

advertising. This is a force that most of the other great inventions that have made for growth and prosperity, such as the steamboat and the steam locomotive, did not have. Neither the newspapers nor the great national and commercial trade periodicals had as yet become a vital force in business life, to propagate new and useful products.

Without this great force — without the great daily newspapers and national magazines functioning as they do to-day — it would doubtless have taken the automobile industry at least a quarter of a century longer to reach its present size. The automobile to attain the position it has in such a short space of time not only must serve a useful purpose and be so designed and built that it can, but the people must accept it as such.

As a result of the wise exploiting of the automobile and its universal sale the American public is more motor-wise than any other nation in the world. It is true, of course, that the average American is wealthier than the individual of any other nation, but it is also true that the American public has been sold on the automobile. The superiority of American newspapers and magazines had been an important, if not the most important, factor in the large *per capita* ownership of automobiles in the United States compared to all other countries.

But while it is well to recognize the value of such merchandising as one of the great factors in making the automobile and truck such a recognized and essential part of our daily life, it is likewise well to recognize that the gasoline-driven vehicle fills a genuine need for quick, comfortable transportation, and more important still that the industry is ever alert to more usefully serve the public.

It is true that the automobile industry has its ear constantly close to the ground to find out what the public wants, and to-day actually knows that the public is thinking in terms of automobiles that will cost less to operate, less to keep up, and that will last longer. Knowing this the industry goes right ahead furnishing what is wanted, which accounts for the position of the industry in American commerce to-day.

METALS TIRE AND BECOME FATIGUED — WHY?

A motor truck accustomed to handling loads of six to ten tons may collapse due to axle failure when the only burden the machine is carrying is the driver. A street car which handles 100 passengers during the peak traffic hours of the day may give way due to axle or

wheel collapse when it is returning to the car barn to be greased. An elevator which is adapted to carry thirty persons may crash to the basement pit when empty. Bridge girders which have been designed to support enormous stress and strain may break down under very light loads. Very often automobile, street car, elevator and bridge accidents occur which result in heavy losses in life and injury just because some of the metal parts used in the construction of the vehicles or bridges become so "tired" that — without warning or outward evidence of portending collapse — they give way. These untoward phenomena for many years have presented perplexing and puzzling problems to the engineering fraternity, which has done everything possible along technical and scientific lines to reduce the risk and solve the puzzle connected with metal fatigue.

Under the joint auspices of a number of American engineering organizations extensive and invaluable investigations are now being conducted at the city of Champaign, in the State of Illinois, covering a two-year period, to ascertain accurately the limit of endurance of a wide range of samples of iron and steel and other metals. Heretofore, frequent experiments have been carried out to determine metal durability under the strain of a single load. The purpose of the present investigations, however, is to find out conclusively about fatigue strength under frequent loadings. Novel and unique testing machinery, which under laboratory conditions over a short period submits the metal materials to stress and strains such as they would be exposed to during many years of service usage, has been designed expressly for the purpose of clearing up the intricacies which, previously, have obscured the engineer's knowledge concerning the everyday history of steel and metal materials and their reactions to continuous service.

A modern Goliath of professional weight-lifters for many years may excel all his rivals in remarkable feats of strength. Then, due to excessive use of certain muscles or on account of old age, he will begin to slow up; his muscles are unable to respond so adeptly to the dictates of his will. He has to reduce the weight of his dumb-bells, bar-bells and cannon balls. Gradually, he fails in health and strength, and, ultimately, he is obliged to abandon his exhibition work.

Now, unlike the human metabolism, the strength of metals gives way all of a sudden without any indication of impending failure. The line shaft in a machine shop may have been in active service only a few years, or a few

months, and appear to be as good as new — yet, unexpectedly, it may fail and break and cause a costly and serious accident. It is to secure some tangible and accurate explanation of these happenings that the experiments are being carried on.

TRAFFIC CONTROL IN THE LARGE CITIES.

In all large American cities the problem of traffic control is becoming constantly more difficult of solution, but nowhere so much so as in New York city. Plans, such as the "control towers" on Fifth Avenue in that city, have been more or less successful, but as yet nothing has been attempted of such wide scope as the present plan to control all traffic on that avenue from one central station in Times Square, where Fifth Avenue crosses Broadway. It is planned to install red, green and yellow search-lights conspicuously that will control simultaneously all the traffic north and south, as well as the cross-town traffic, east and west, all operated by a single switch in a tower at Times Square. A traffic Director, seated in the centre of the city, by the pressure of a button, will cause a number of red lights to flash that will stop all traffic moving in one direction, while green lights will govern the traffic in the other direction.

The movement which was originated in Jamaica in favour of sending a united West Indian deputation to London to discuss with the Imperial authorities the parlous condition of the sugar industry is not meeting with the success that was anticipated. It is not likely that the deputation will consist of more than two or three persons, one of whom will be from Jamaica. The subject of assistance in the shape of a larger preference to sugar, tobacco, and coffee has been discussed with Mr. Wood's mission; and it is stated that commercial organizations outside of Jamaica cannot see the use of sending a delegation to London at this stage.

Before the war locomotives required for the Tasmanian Government railways were imported from the United Kingdom, and more recently orders have been placed in other States of the Commonwealth. New State workshops are now being completed. It is officially stated that it will be possible to do every class of carriage and engine construction work in Tasmania, and that it will be necessary to place any further orders for locomotives outside of the State. The construction of boilers will also be undertaken.

Paper-making in India.

Mr. R. W. Sindall (Messrs. Sindall and Bacon) has just returned to England from a two months' visit to India, a country which he first visited in 1906, when he undertook an official mission to report on the manufacture of paper from bamboo. His recent visit was on behalf of an Indian firm, who are pushing forward inquiries as to the possibility of starting a paper and pulp business in the district of Bombay.

When Mr. Sindall arrived in India, he found an interesting controversy proceeding as to whether a duty should be imposed upon imported paper. Mr. Barbour, the Manager in Calcutta for the Titaghur Paper Mills, had written an article in an Indian Paper on the general condition of the trade in the country, and suggested that unless the Government imposed an increased duty on imported paper, local mills would be unable to survive. The amount of duty suggested was 30 per cent., with special arrangements for a rebate on the import duty on raw materials and cheaper railway facilities for the local paper trade. In the course of an article which Mr. Sindall wrote for the *Times of India*, he pointed out that the paper used in India amounted to 80,000 tons a year, of which only 25,000 to 30,000 was manufactured in the country. Naturally, the newspaper people in India were up in arms about the proposed duty, for the reason that the paper mills in the Empire are unable to make news print at the price of the imported article. In fact, if it were not that the Government arranges to take a certain amount of the output to the local mills, they could not be profitably carried on.

The fact that for years past over 50,000 tons of paper have been imported annually has led to the production of many schemes for the erection of paper mills to supplement the output of the present mills at Titaghur, Kankinara, Bengal, Lucknow, and other places. An interesting feature of recent promotions is the fact that native people are concerned in them, although the ideas they have as to the cost of establishing a paper mill appear to require correction. Prospectuses have been issued and the investing public invited to subscribe the capital asked for, but so far all such attempts have failed to secure the desired object. One of the latest schemes is that of the Assam Paper Mills Co., with an authorized capital of two lakhs of rupees. They estimated that

the capital outlay for the erection of a factory capable of producing 5,000 tons of paper per year would be £70,000 for plant and machinery and £14,000 for buildings and land.

A very different estimate, however, is put forward by Mr. Sindall in his contribution to the *Times of India*, in the course of which he says a paper mill having an output of 100 tons cannot be erected and put into operation with less than 40 to 50 lakhs of rupees. Such a schedule is not complete when showing only the cost of machinery. There are equally necessary items such as cost of buildings, erection, staff accommodation, transport of material from Europe to the mill site, promotion, expenses, working capital, etc. Money must be found for about 8 to 9 months' supply of grass, labour and working expenses before any cash is realized on the paper produced.

Mr. Sindall goes on to say that it is a common fallacy to suppose in India a paper mill can be equipped with cheap labour. It is more true to say that the cost per ton of paper under this heading is not less than the charges in Europe. Supervision and skilled attention must be in the hands of Europeans, and where ten European labourers are sufficient 20 or 30 Indian coolies are required. Some of the schemes published recently show a lamentable want of care in the preparation of a schedule of items that go to make up the capital required.

In connection with the recent visit to India Mr. Sindall was instructed by an Indian firm to make a thorough report and gather all information as to the possibility of establishing the paper industry in the Bombay Presidency. In this connection, he informed our representative that the Government of Bombay had appointed a Director of Industries who was anxious to promote local enterprises. In India the whole of the forest products belong to the Government, and after permission has been obtained taxes are imposed for whatever material is cut. Certain conditions apply with regard to the use of water, because while there is plenty of water for several months of the year during the monsoon period, in dry weather the water in the rivers shrinks to almost nothing. For instance, in the river with which Mr. Sindall was concerned the water is 40 feet deep in the wet period and only 2 ft. 6 in. in dry weather.

With regard to the quantity of water used in the manufacture of paper, Mr. Sindall points

out that few promoters realize the enormous volume of water that is essential for paper-making. It is estimated that for high class writings no less than 70 to 80 thousand gallons of water per ton of paper are needed, for medium qualities of printing from grasses 40 to 60 thousand gallons; for news made from wood pulp 8 to 10 thousand gallons. Hence for a mill making, roughly, 100 tons of paper from grasses probably 5 or 6 million gallons of water clean, free from sand, mud, and suspended matter will be needed.

The cost of the fuel is likewise an important item in cost of production. The quantity of coal used for a ton of paper will be, say, 3 to 5 tons according to circumstances. Apart from the weight of raw material the quantity of fuel and chemicals used per week for a mill of the output mentioned, say 100 tons, will aggregate 480 to 500 tons inclusive of railway charges for transport which escapes the attention of a superficial observer.

In the article already referred to, Mr. Sindall has an interesting paragraph under the heading of cheap raw material. That, he says, seems to be regarded as an all-sufficient reason for plunging into an intricate and expensive manufacturing process, and he proceeds to say that the only logical order of inquiry commences with the query—Is the material suitable for paper-making? Fortunately, the value of the material can be determined by accurate trials in a laboratory properly equipped with suitable appliances, making a sheet of paper and ascertaining how many pounds of material must be employed for making one pound of paper. The investigation of a complete scheme then takes the following form:—

Is the material available in sufficient quantity? asks Mr. Sindall, who goes on to say: In the case of a mill with an output of 100 tons of paper a week, the quantity of grass available must be 250 to 300 tons a week. This may mean a large area of forest land, and at once raises the question of cost of collection, baling, delivery to convenient places for transport, and other little items connected with the handling of large quantities of raw material which are apt to escape attention. It is quite safe to assume that the carefully calculated cost of grass delivered to the proposed site must be increased by 50 per cent. In this connection the accessibility of the sources of supply and the distance from the mill are matters of vital importance.

For the purposes of his report Mr. Sindall went right up into the jungle area, where his clients propose to obtain their grass, and he

inspected the river from which the water would be obtained and the site, making, in fact, a thorough investigation of all the considerations entering into the scheme, and upon this he has made an exhaustive report.

In connection with the paper-making developments which are taking place in India, it is interesting to learn that Mr. Helstrom, representing Messrs. Boving and Co., Ltd., is at present in India for the purpose of answering any inquiries that may be made under this heading.

It was not Mr. Sindall's purpose on this occasion to investigate any further the subject of bamboo. He states that a firm has started making bamboo by the sulphite process, the resulting pulp being described as good. There was, however, trouble with the digesters, but this matter is being adjusted, and the manufacture of pulp from bamboo placed on a proper basis.

Mr. Sindall also intimated that the Titaghur Paper Mills have started manufacturing bleach and caustic soda by the electrolytic process, but it is too early yet to say whether this is being run economically or not, since the process has only been in operation a few months.

An interesting note on the experimental paper mill which the Government is establishing is furnished by Mr. Sindall, who, in the course of his tour paid a visit to Dehra Dun and called upon Mr. Wm. Raitt and Mr. Pearson, Director of the Forest Research Institute. He arrived there just in time to see some of the experimental plant being delivered from Messrs. James Bertram and Sons of Edinburgh. He saw two of the digesters being hauled into position by bullocks. The party was on its way to the ground where the foundations were being dug for the new experimental house, in which the suitability of Indian fibre for paper-making is to be tested on a large scale with a machine capable of producing finished paper 30 in. wide.

Mr. Raitt, it is stated, seemed very pleased with all the work that was going forward and he hoped to have an experimental factory in operation within a year and a half from the time of Mr. Sindall's visit. It is conceivable that one advantage of making the research plant sufficiently large to produce a sheet that can be used commercially is that it will help to cut down some of the costs of the experimental work.

The Government of British Guiana propose to employ granite in the construction of roads in the Colony.



Views and Comments.

BY "ECONOMICUS".



In the course of his statement before the Sessions Judge, Ahmedabad, Mr. Gandhi spoke in part as follows :—"India has become so poor that she has little power of resistance in famine..... Little do town-dwellers know how the semi-starved masses of India are slowly sinking to lifelessness. Little do they know that their miserable comfort represents the brokerage they get for the work they do for the foreign exploiter, that the profits and the brokerage are sucked from the masses. No sophistry, no jugglery in figures, can explain away the evidence, the skeletons in many villages present to the wayfarer's eye." Though one may not be inclined to use this as a stick with which to beat the British Government in this country, parties of every shade of opinion must respectfully consider the truth or otherwise of this picture drawn by one of the keenest of observers and most sincere friend of the poor. Compare this with what a "co-operator," Mr. Talmaki of Bombay said in another connection, already noted in these columns. Said the latter :—"The agriculturists in rural areas are starving for want of funds and the traders, artisans and craftsmen in small towns are struggling, while a few cities in every province are overflowing with money, which besides financing legitimate commerce and industry has led to all sorts of speculation and gamble." We are inclined on the whole to endorse the truth of Mr. Gandhi's statement and our belief is fortified by the following facts of our present economic condition :—(1) The growth in importance of such sea-port cities as Bombay, Calcutta, Karachi and Madras which specialize in the export of raw materials and the import of manufactured commodities intended to flood the countryside ; (2) the comparative absence of indigenous industries, small scale and large scale, and the consequent unemployment as well as the increasing pressure of the population on the soil ; (3) the absence of proper credit facilities for the poor in rural areas ; (4) the increasing tendency on the part of the well-to-do and rich classes in our rural areas and cities to resort to unproductive expenditure, their tendency towards saving without its being invested in rural industries and their craving for imported articles to

satisfy their necessities and comforts of life ; (5) The comparatively high State expenditure, especially on such unproductive items as the military and the police. We are convinced that our rural prosperity demands a reversal of these tendencies. India must cease to depend upon foreign manufactured commodities ; village industries must be resuscitated ; the rich and well-to-do classes must invest their savings as far as possible, in rural co-operative credit societies ; the Government must cease to spend such large sums on the military and the police and the judiciary and must train the rural classes in the art of local self-government on an honorary basis.

Writing on the subject of "Indian discontent" in the recent issue of the *Observer*, Sir Valentine Chirol draws pointed attention to the unequal distribution of agricultural resources brought about by oppressive landlordism entailing enormous suffering for the poor. Says he :—"Oppressive and precarious as their terms of tenure generally are, the ryots often have to endure many other arbitrary exactions for which they simply dare not seek redress. A landlord wants to build a new house or buy a Rolls Royce, or sending his son to Europe and he just claps an extra anna in the rupee on to the tenants' rents.... Many of the landlords are absentees and their agents are apt to be all the more rapacious." We have ourselves pointed out in these columns that this is one of the most menacing features of our economic situation. The remedies we can suggest are :—(1) The landlords must change their angle of vision and treat their tenants on better terms ; (2) they must utilize their savings to provide financial and irrigation facilities for their tenants and rural classes by investing their savings in Co-operative Credit Societies or providing public utilities and other amenities, cultural and educational, of village life ; (3) the resuscitation of small village industries to lessen the pressure of the population on the soil ; (4) the State may safeguard tenant's rights by legislation, but we must rely more on sound education and the spread of healthy public opinion in this matter among the landlord class everywhere.

In the course of the same address, the President said:—“The causes of discontent in the land lie in our economic condition; in the poverty of the masses, in the lamentable lack of diversity in their occupations; in the unrelieved agricultural congestion; in the illiteracy of the bulk of the people; in ill-paid, ill-organized, and ill-trained labour; in short, in our moral and material condition and in our general backwardness as a nation.” We quite agree.

In reply to the representations of the same Chamber regarding the purchase of stores in India, Mr. Innes, Commerce Member, after sympathizing with the idea, gave out an advice which, to say the least, is extremely ridiculous. Said he:—“I am against any sort of hastening with regard to this question, and I think that the interests of the country will best be served by *moving slowly*.” (Italics ours.) We are sure that this mentality, which seems to be the peculiar monopoly of the Government of India, will not appeal to such an intelligent body of businessmen as represented by the Indian Merchants’ Chamber and Bureau. Alas! While the whole civilized world moves with the ‘speed of the Punjab Express’ to resuscitate national industries, the Government of India alone should still cling to an unbusiness-like and un-understandable policy of moving slowly! We feel that this advice will not be tolerated for one moment in any other country calling itself civilized.

In reply to the Indian Merchants’ Chamber and Bureau at a meeting of the Chamber’s Committee at Bombay, Sir Malcolm Hailey, Finance Member, remarked:—“The policy of the Government of India was to buy in the cheapest market and the High Commissioner was similarly instructed with regard to his purchase of stores. The Government of India had the right of borrowing in the cheapest market in the same way as buying in the cheapest market.” It is astonishing that such a keen financial expert like our Minister should not notice the fallacy of the “cheap market” theory which, as we held in another issue, overlooks altogether the material advancement of this country and the tax-paying capacity of its people. We hold that stores must be bought and loans raised in this country, even when they are quoted at a higher rate than other nations, for that will mean increased work for the labourers of this country and increase in their purchasing power;

In his presidential address to the South Indian Chamber of Commerce at its 12th Annual General Meeting, Sir M. C. T. Muthiah Chettiar spoke as follows:—“The increasing revenues that we raise (in India) are all consumed by the great services that we maintain beyond all our requirements, and what must be utilized for advancing the moral and the material well-being of the country and its people, is being consumed in the shape of salaries and pensions, military equipments and munitions, and an unceasing overflow outside the country of the wealth and sustenance that ought to nourish and maintain the millions of this country. The policy of economic exploitation of the country should give way to the policy of real economic regeneration and reconstruction.” Now Mr. Chettiar is a “co-operator” and a loyalist, but this is as strong an indictment of Government policy as we have ever heard from any “Non-co-operator” and “disaffectionist”. It behoves the Government to lend its ears to its friends and set its house in order to enlist the willing and generous homage of the people.

In proposing the increased postal rates, the Government used two arguments, among others, which are only partially true. One was that the Post Office must pay its way and the increased expenditure on postal services must be met by increased charges. Secondly, the increased postal rates do not affect the vast majority of the rural classes who do not make use of the postal service all their lives. Now, the principle governing the determination of the cost of such an important public utility service as the Post Office is not merely its ability to pay its way, but the maximum “consumers’ surplus” it affords to the public consistent with the maximum revenue to the State. If the increased rates curtail the “consumers’ surplus” more than in proportion to the gains of the State, they are uneconomic. A cheap postal service is one of the best civilizing agencies and it is the duty of the State to support it even at a loss. Secondly, though not directly paying for cards and stamps, the rural classes may be indirectly affected by the rise, since the commercial classes may try to shift the incidence of the increased tax on to the consumer. The average middle classes who form a considerable section of the users of Post Office are certainly hard hit by the present increase,

Economic Notes.

INDUSTRIAL, AGRICULTURAL, EDUCATIONAL AND GENERAL.

From the review on the Railways in Madras Presidency just issued by the Madras Government, we note that the following is the present position of the proposed Erode-Nanjangud Line with a branch line from Kottamangalam to Mettupulaiyam (119.20+22.61 miles for branch line, in 3 ft. 3 $\frac{3}{4}$ in. gauge):—"The British section of the line will lie in the Coimbatore District. The District Board proposes to take up the Erode-Satyamangalam portion (*Vide* remarks against that item under 'District Board Lines.'). The prospects of the whole line were under investigation by the special Engineer deputed in connexion with the Mysore West Coast Railway survey. This officer submitted his report to the Railway Board in 1916, which was under their consideration. The Mysore Durbar requested their permission to construct and own the whole line but the Railway allowed the Durbar to begin the construction of the line from Nanjangud southwards within their territory up to Hardanahalli and were prepared to consider the revised application of the Coimbatore District Board—for concession for the construction of the Erode-Satyamangalam section—which is however pending the decision as to the construction of the Dindigul-Palghat Railway."

* * *

The Indian Cotton Committee are promoting an all-India Bill having for its object the general improvement of cotton cultivation throughout India. The Bill is under reference to the provincial Governments and various interested associations for their observations, and provides for a cess of four annas on every bale used in an Indian mill or exported on the principle that the industry should itself pay for special research. The eight lakhs which it is expected annually to yield will be devoted, in the first instance, to establish an all-India technological institute in Bombay for the scientific study of special questions, such as the intrinsic spinning values of Indian cottons, for the benefit of manufacturers and agricultural research workers. Another aim is the provision of funds for the maintenance of cotton research specialists in the provincial Agricultural Departments.

The quality of the palampores produced at Masulipatam has deteriorated in recent years, alike in colouring, design and workmanship, and the cotton printers are now experiencing difficulty in finding a market for their production. There is little doubt that, so far as the English market is concerned, what is wanted is a return to the superior old designs, and not the mass production of inferior new patterns; but the tendency at Masulipatam, as elsewhere, is a large outturn of cheap products instead of a more limited quantity of better work. Some samples of fine old palampores have been obtained from the Museum attached to the School of Arts, and endeavours are being made to induce suppliers to reproduce them. If the printers are successful in producing palampores of the old standard of quality and excellence, there is reason to believe that it will be possible to effect at least a partial revival of the industry.

* * *

Sir Malcolm Hogg of the India Council and a partner of Messrs. Forbes, Forbes, Campbell & Co., Ltd., recently visited Katni, C.P., with a view to inspect the properties and study the possibilities of Olpherts Paints and Products, Ltd., the managing agency of which was transferred to his firm in October last by Messrs. Grandage Moir & Co., of Calcutta, as a result of their going into voluntary liquidation. The new agents propose to concentrate their energies for the present on the production and supply to local and foreign markets of dry pigments and in due course to fully equip the half-finished factory with up-to-date machinery and endeavour to meet, principally, the Indian and Far Eastern demand, for ready mixed paints for iron and wooden structures, as also for decorative purposes.

* * *

The reconstituted C. P. Advisory Board of Industries has recommended the erection and equipment of a research and experimental laboratory at Akola for the investigation of vegetable oils and fats. The local Government have approved the recommendation and have sanctioned the inclusion provisionally of a sum of Rs. 75,000 in the departmental budget for the year 1922-23,

We would invite the attention of our readers to the provisions of the New Income Tax Act which became law with effect from the 1st April 1922 and the Rules thereunder. Among the salient features of the provisions of the new Law, the following are of immediate importance. The first is the alteration in designation of officers. The Collector of Income Tax becomes the "Income Tax Officer" and the first appellate authority is known as the "Assistant Commissioner of Income Tax." Next comes the payment of tax by deduction at the source. In the case of income chargeable under the head "salaries" (i.e., salaries, wages, any annuity and fees, commission, perquisites or profits) where deduction is not made by or on behalf of Government the persons paying the salary shall pay, within one week from the date of deduction, to the credit of the Government of India by remitting the amount to the Income Tax Officer concerned or to such officer as he may direct and shall send therewith a statement showing the name of the employees from whose salary the tax has been deducted, the period for which the salary has been paid, the gross amount of the salary, the deduction for a provident fund or insurance premia, and the amount of tax deducted. The two per cent commission hitherto allowed to firms for voluntarily effecting deductions at source is not now admissible. In the case of income chargeable under the head 'Interest on securities' where the deduction is not made by or on behalf of Government, the person responsible for paying the interest shall pay to the credit of Government of India, by remitting the amount to the Income Tax Officer concerned or to such office as he may direct with a statement showing the following particulars: Description of securities, Number of securities, Dates of securities, Amount of securities, Period for which interest is drawn, Amount of interest and Amount of tax. Under the Finance Bill just passed by the Legislature, income-tax is to be levied on salaries between Rs. 30,000 to Rs. 39,999 at fifteen pies per rupee and on salaries of Rs. 40,000 and over at eighteen pies per rupee. No change is made in rates on salaries of less than Rs. 30,000. The new rates will be levied on salaries for March paid in April. The schedule of revised rates is as follows: 2,000 to 4,999 5 pies per rupee; 5,000 to 9,999 6 pies per rupee; 10,000 to 19,999 9 pies per rupee; 20,000 to 29,999 12 pies per rupee; 30,000 to 39,999 15 pies per rupee; 40,000 and over 18 pies per rupee.

Lecturing on "Wool in Relation to Dyeing" at a meeting of the West Riding Section of the Society of Dyers and Colourists, held in Bradford, Mr. J. W. Radcliffe expressed the opinion that the Government had made a mistake in imposing restrictions on the importation of foreign dyes. With English dyes, he said, we did not obtain that brightness of colour which we got from the same classified German dyes. Our export trade inevitably suffered because our competitors, to whom the German dyes were freely available, were in a position to get better colour effects in cloths manufactured from the same qualities of raw materials. In support of his contention, Mr. Radcliffe referred to the contracts now in the hands of several West Riding manufacturers for "mignonette" khaki for Serbia. The wools used for this material were, in the first instance, dyed separately in several shades, including blue, lavender, red and indigo, and then, in the necessary proportions, blended to produce the colour required. When British dyestuffs had been employed, it was found, after the processes of milling and scouring, that the colour of the cloth was much flatter than was the case if German or Swiss dyes had been used. It was, perhaps, in the scarlet dye that Germany had the strongest advantage over our own products. Referring to "resist" dyeing, the lecturer said that yarns submitted to this process in England came up considerably weaker than those similarly treated on the Continent.

* * *

Members of the Association of Importers of Agricultural Machinery in France complain that they suffer from the invasion of German machinery, which is swamping the French markets, being imported at less than half the price of the machines offered by members of the Importers' Association. Hence Great Britain and the United States, the two principal countries that for upwards of half a century have supplied France with agricultural machinery, are under a serious handicap.

* * *

China, the largest producer of silk in the world, was one time also its largest exporter, but now Japan far exceeds it. The silk entering the markets of the world in 1920 averaged 41,877,000 pounds. The United States, which is the largest silk manufacturing country, imported 30,058,000 pounds of raw silk in 1920, valued at \$301,000,000. The total value of the exports of silk and silk products from China in 1920 was \$127,000,000.

The United States Trade Commissioner in India reports that, as a result of an investigation made by the Director of Agriculture in Gujerat, a region in the Bombay Presidency supporting a population of 9,000,000, the native family of three adults and two children of the class owning small holdings of land spends annually 228 rupees. The expenditure of the field labourer is, of course, less. An investigation in the region of the Deccan revealed that only 35 per cent of the families were entirely self-supporting. The chief demand for imported goods, except for cotton clothing, comes from landed proprietors, money lenders, merchants, and city dwellers, though the purchasing power of this class has not been estimated. The growing industrialization of India will, however, undoubtedly eventually effect changes in the economic condition of the native population.

* * *

Mr. S. M. Marshall, Consulting Engineer for the Tata Iron and Steel Co., Ltd., has drawn up an interesting programme covering the next five years. The developments forecasted include the installation of three new plants, in addition to those already in operation at Kulti (East Indian Railway), at Tatanagar and Rakha (Bengal-Nagpur Railway), and comprise those of the Indian Iron and Steel Company near Asansol, of the Eastern Iron Company near Chandi between Sini and Adra on the Bengal-Nagpur Railway, and a third undertaking which will probably be located at Manharpur on the same railway system. Besides these new openings, the three existing plants are being extended, and the Tata Iron and Steel Company are constructing a number of similar subsidiary industries near their headquarters at Tatanagar.

* * *

Mr. R. W. Sindall (Sindall and Bacon), who recently visited India to investigate the possibility of establishing a pulp and paper plant for a local firm, came in contact with the printing industry at one or two points. He had the pleasure of going through the printing works of the *Times of India* in Bombay, being conducted round the whole of the works. He saw in operation a little Hoe machine which is the only rotary press, he understands, in India. This seems to show that a pretty good field exists in our Eastern Empire for British printing machinery: and the activity of the Press in that country ought to extend the market for printers' supplies, says the *British and Colonial Printer*.

In view of statements to the effect that Japanese "Cultured" Pearls are indistinguishable from, and equal in value to, Indian pearls, and in order to re-assure possessors of pearls, a number of firms on their own behalf announce that the value of Indian pearls is not affected by the introduction of "cultured" pearls, the reasons given being:—(1) "Cultured" pearls are beads covered with pearl nacre of varying degrees of thickness. (2) They can only attain a comparatively small size, and on account of their quality do not compete with Indian pearls, from which they can be distinguished. (3) They cannot be compared with pearls, any more than rolled gold with solid gold, or electro plate with silver. The French Chamber Syndicate have forbidden their entry or sale in Paris as pearls.

* * *

Mr. C. R. Palairat, the Director of Industries of His Exalted Highness the Nizam's Dominions, is of opinion that there is a very promising future for the cotton oil industry in the State, and if the tariff system is modified in favour of industries, he feels sure private capitalists will take the matter up. "It is unfortunate," he observes, "that a department of industries and commerce in a State having such enormous resources in the way of oil seeds should have to report the backwardness of the oil industry generally, and I should not be doing my duty if I did not emphasize, with all the force at my command, one of the main causes, and the necessity for Government's serious consideration of the matter."

* * *

The Board of Trade Committee, which inquired recently into the application of British toy manufacturers and wholesalers for protection under the Safeguarding of Industries Act against German competition, has reported that the conditions required under the Act are not fulfilled in the case of the toy trade, and therefore the Board cannot take any further action in the matter. This means that no import duty will be imposed on German or other foreign-made toys.

* * *

A most informative treatise on artificial musk is translated, with slight abridgment, in the March issue of the *Perfumery and Essential Oil Record*. It gives a complete account of the chemistry of the subject, together with several hitherto unrecorded observations, and others only to found in University theses difficult of access.

Economic Gleanings

WORLD'S PROGRESS IN FEW WORDS.

The Societe Generale de Belgique in its recent annual report pleads for the suspension of the Belgian eight-hour law for two or three years, and a general reduction in wages.

The wine-growers of the recovered provinces have decided to form a Wine Bourse at Strasbourg which will compete with the mart that has long existed at Kehl, in the territory of Baden.

Negotiations for the formation of the Czech Lloyd are progressing satisfactorily. A subsidy is promised from the Government at Prague, and an active participation of private capital expected.

H. M. Commercial Secretary at Rio de Janeiro has informed the Department of Overseas Trade that the sum of £200,000 is to be expended on the proposed port works at Port Natal, Rio do Norte, Brazil.

A Commission presided over by the Italian Under-Secretary of Finance has recommended a reduction of 50 per cent in the motor taxes applied to small and medium powered cars, as well as motor cycles.

H. M. Commercial Secretary at Christiania reports that it is proposed to commence immediately preliminary work on the two electric railways for which concessions have been granted to A/S "Akersbanerne."

Owing to the increasing cost of the railway administration in Germany, which is chiefly due to greater expenditure in wages, the goods tariff, which was raised considerably on February 1, will be further raised by 20 per cent as from March 1.

The Czecho-Slovak negotiations with Russia for a commercial treaty are nearing their end, and a commission is shortly expected at Prague with a view to its completion. It is hoped that arrangements will be made for the exchange of Czecho-Slovak footwear for Russian raw leather. Quantities of seeds are being purchased both by Russia and the Ukraine.

Plans have been made for the improvement of the harbour of Belize, British Honduras, and dredging operations will be begun immediately. The undertaking will cost \$1,000,000.

The Union des Fabricants du Nord de la France, whose members are mostly linen manufacturers, is now a buyer of materials as well as a seller of manufactured products at home and abroad. Its offices are at the Syndicat des Fabricants de Toile, Lille.

The Czecho-Slovak Government has arranged an express passenger service by the Elbe and Danube routes, *i. e.*, from Prague to Hamburg, and Bratislava to Galatz, while the recently founded shipping companies have contracted with the State railways for transport at a fixed tariff.

Owing to the prolonged drought in Northern Italy, which affected the production of electric energy, many manufacturers are now using brown coal. This fuel is abundant in Italy. From its distillation sulphate of ammonia is obtained, for which there is a great demand in Italy for agricultural purposes.

At a meeting held at Gratz (Austria) between representatives of Italy and the various new States, successors to the Hapsburg monarchy, it was decided to grant special facilities for passports which practically amount to an abolition of all restrictions on the free passage of travellers between the countries concerned. The port of Trieste will benefit by this arrangement.

The United States shipments of feeding stuffs for 1921 are officially returned at 129,054,505 bushels of maize, 25,834,000 bushels of barley, 3,224,155 bushels of oats, and 29,811,721 bushels of rye, while 6,016,500 cwt. of linseed were imported. The chief features of these returns are the great revival in maize exports, the large exportable surplus of rye (attributed to the "dry" legislation), and the transference of the United States of America from the list of shippers of linseed to that of importers on a considerable scale.

Deposits of high grade copper ore have been discovered at Beasley, in the Nelson district of British Columbia.

An aerial survey of the hinterland of British Guiana is being conducted by the Bermuda and West Atlantic Aviation Company.

The liquidation of the Consortium for the supply in Italy of sugar for industrial use is postponed until May 31 of this year.

Jamaican penkeepers are investigating the possibility of establishing a factory for the preparation of salt beef in the colony.

It was announced at the annual meeting of the Bulwayo Cement Company that, owing to foreign competition, "there was no alternative but to close down the works." The authorized capital is £100,000, of which £65,515 is issued.

During the ten months of the fiscal year which have passed Canada's trade has declined to the extent of \$890,000,000. Stagnation in industry, instability of foreign exchanges, and fall in values are given as causes of the decline.

The Odzi factory of the Rhodesia Meat Packing Company has been reopened under arrangements which include the cattle breeder receiving one-third of the purchase price in cash and the balance in Preference shares carrying 8 per cent.

The loss on the working of the Canadian Government-owned Merchant Marine in 1921 was \$1,700,000. The total loss, including the fixed charges for depreciation, was about \$9,000,000 for the year. There are 60 ships in operation. The lack of cargoes due to the surplus of tonnage, and trade depression are given as reasons for the loss.

The number of commercial ships which passed through the Panama Canal in the calendar year 1921 was 2,783. In the year 1920 the number was 2,814. In net tonnage and tolls, however, the year 1921 exceeded 1920. Net tonnage amounted to 11,435,811 tons, as compared with 10,378,265 tons in the previous year. Tolls aggregated \$10,325,718 in 1921, compared with \$10,295,362 in 1920. The cargo carried through the Canal in 1921 amounted to approximately 10,708,338 tons or 327,771 tons less than in 1920.

The Province of Quebec appears to have abandoned the idea of imposing an embargo on the export of raw asbestos. It is stated that the Government are considering the advisability of abolishing the 5 per cent royalties on asbestos when manufactured within the province and exported in a manufactured state.

The Mount Bischoff Tin Mining Company, Tasmania, is successfully handling pyritic ore containing 2 per cent of tin at a cost of 12 s. per ton. The results of this method of treatment recommended by Mr. T. H. Levings, the State Mining Engineer, establish a new world's record in profitably treating low grade pyritic concentrates.

The area under cotton in Uganda during the current season is estimated at 164,000 acres, compared with 236,000 acres in 1920-21. The crop in the latter season is estimated to have exceeded 75,000 bales of 400 lb. each, of which 70,000 bales had been exported by the end of last year. The current crop is estimated at 50,000 to 55,000 bales.

Messrs. Boving and Co., Ltd., state that the machinery which they are supplying for the Mangahao hydro-electric undertaking in New Zealand consists of three 8,000 b.h.p., two 4,000 b.h.p., and two 375 b.h.p. Pelton type water wheels; also distribution pipes in connexion with these turbines, including 14 Johnson-Boving valves, ranging from 20 in. to 32 in. in diameter.

It is reported in Sydney that plans have been prepared for the formation of a gigantic world-wide co-operative wheat marketing organization, which would eventually control the crops of Canada, the United States, and Australia. Mr. Trethowan, the chairman of the Voluntary Wheat Pool, is going to London *en route* for Canada and the United States, to consult the different wheat organizations there with regard to this scheme.

The Government of Trinidad has issued a regulation to govern the entry under the preferential tariff to British Empire goods transhipped *en route* at a foreign port or shipped at a foreign port after overland transit, in cases where a through bill of lading or railway consignment note cannot be obtained. Under the new regulation the certificates required under the preferential tariff are to be signed by Customs officers at the port of transhipment.

The Italian soap industry has developed notably since the war. In 1920 there was an excess of nearly 1,000 tons in the export of common soaps over the imports. On the other hand, the imports of high-grade soaps still exceed the exports, and British manufacturers hold the first place as to quality.

The attempts made by the Mysore Sericultural Department to introduce Mysore silk into European markets as well as the investigations carried on by the Superintendent in the principal weaving centres in South India have shown that the superiority of Mysore silk is undisputed. Its higher price, however, when compared with the quality of the reeling, places it at a disadvantage in competition with foreign silk.

The Chinese authorities are now encouraging the cultivation of cotton to such an extent that the exports of raw material to Japan are likely to show a gradual yearly increase. The annual report from China during the last three years averaged 1,292,000 piculs — a picul being about 133½ lbs. About 90 per cent of this went to Japan. The yield of raw cotton in China last year was 11,560,000 piculs, the figures having doubled since 1913.

Recently H. E. H. the Nizam sanctioned the spending of Rs. 8 lakhs on a factory for the purpose of producing alcohol and ether, principally for power purposes. After a preliminary survey, a site was chosen at Kama-reddi near a large tank and in the centre of the mahua growing district. Distilling plant has been ordered from France capable of producing in a day 1,200 gallons of 96 per cent. alcohol and 300 gallons of ether and it is expected that about the middle of next year the factory will be ready to produce.

Captain Elliot, M.P., writing in the *Nineteenth Century*, states that in April last year a research in the Glasgow slums showed that a quarter of the families were getting a food ration lower than the average Viennese. "Any election that comes," he declares, "will turn in the industrial regions not on the superior morality of this or that set of politicians, or Washington, or the Greek wars, but upon food, and the more so since half the electors will be the housewives. He says the problem is accentuated by the fact that the people on whom this great depression bears more harshly are the primary workers.

The Queensland Cabinet has approved proposals for the immediate beginning of work on railway lines to provide indispensable communications for the great Upper Burnett settlement area; and has also ordered the survey of the development of Dawson Valley.

Representations have been made to the Government of Jamaica that legislation should be enacted to provide for the inspection of every article of agricultural produce exported from the colony. Recently a law was passed to provide for the inspection of fruit, as immature bananas were being shipped to overseas markets. This has led to a discontinuance of the practice of sending away unfit fruit.

As the result of a protest made on behalf of the French Government, the British Guiana Legislature has amended the Customs Duties Ordinance passed in 1920. The Ordinance now provides that where the cost of goods imported from a foreign country is expressed in the currency of that country the value, for the purpose of *ad valorem* duty, shall be calculated in sterling money according to the current rate of exchange on the day of the arrival of the ship.

A committee has been appointed by the British Guiana Legislature to report on the question of protecting needle-women of the Colony. A good deal of discussion centred around a motion that an import tax be levied on underclothing and pyjamas, cotton twill, printed cotton, and flannelettes, trousers, and jackets made of khaki dungaree, and cotton tweeds, shirts made of cotton prints, and Oxfords, to the extent of 40 per cent *ad valorem*, British Preferential Tariff, and 80 per cent general tariff.

The sisal industry of Kenya has been hit hard by the action of the American Government in protecting Manila hemp and thus diverting Mexican sisal from United States markets to Europe. During a debate in the Kenya Legislative Council it was stated that local sisal had fallen from £42 per ton to £35, while Mexican was selling at £26. The Governor agreed to bring the position of the industry to the notice of Mr. Churchill and to suggest that some form of Imperial Preference be applied. Tanganyika is also adversely affected. There are over 30,000 acres under sisal in Kenya and the exports are valued at considerably over £100,000 per annum.

Economic Reviews Reviwed.

WITH EXCERPTS AND COMMENTS.

Analyzing America's Income.

An Analysis of the American dollar, its purchasing power and relation to production and taxes, is afforded in the findings of the National Bureau of Economic Research, made public in November in advance of the formal publication of the results of a year's study of "Income in the United States."

After announcing that the total national income of the United States in 1918 was \$61,000,000,000, as compared with \$34,400,000,000 in 1913, the study shows how income is distributed, the shares received by capital and labor, including the farmer, income tax discrepancies, the contribution of housewives, and offers a comparison of income in the United States with the national and per capita incomes in the United Kingdom, Germany and Australia. The complete findings will be published early in November.

Although 1918 showed a great increase in dollars, it did not represent a like increase in production, most of it being due to the rise in prices, for the dollar of 1918 and 1919, according to the report, was a much less efficient dollar than that of 1913. The actual total of commodities produced increased, therefore, very little, if at all, and a large part was war materials, and not of a kind really benefiting consumers.

ANALYZES REAL INCOME.

Individual incomes, estimated on a per capita basis, rose from \$340 in 1910 and \$354 in 1913 to \$586 in 1918, but, the report says, \$586 in 1918 was equal to only \$372 in terms of the purchasing power of five years before. The study, said to be the most exhaustive ever made of the income question in the United States was conducted by Wesley Clair Mitchell, Willford I. King, Frederic R. Macaulay and Oswald W. Knauth under the auspices on a board of nineteen directors, including men prominent in business, education, labor, agriculture, economics and practical statistics, and representing divergent points of view.

The main findings, including the equivalent value of per capita income in terms of the 1913 purchasing power are exhibited in this table:—

Year	Total National Income (Billions)	Per Capita Income in Dollars	Per Capita Income in 1913, Dollars
1909	\$28.8	\$319	\$333
1910	31.4	340	349
1911	31.2	333	338
1912	33.0	346	348
1913	34.4	354	354
1914	33.2	335	333
1915	36.0	358	350
1916	45.4	446	400
1917	53.9	523	396
1918	61.0	586	372

DIVISION OF INCOME.

One per cent of income receivers in the United States had 14 per cent of the national income, or

\$8,540,000,000 in 1918, according to the report. That is to say that one out of 100 had an income of \$8,000 or more. Five per cent representing incomes above \$3,200, had 26 per cent of the total. Ten per cent, including incomes above \$2,300, had nearly 35 per cent of the total. Those having incomes above \$1,750 had 47 per cent of the total. Eighty per cent, or those receiving incomes below \$1,750, had about 53 per cent of the total income.

The report further shows that, in most of the years since 1913 in the principal organized industries, wages and salaries were about 70 per cent of the total income; while capital (including management) received about 30 per cent, out of which were paid rent, interest and profits; but these proportions varied materially with relative prosperity and depression.

The share of capital in 1916, for example, increased to about 35 per cent, with 65 per cent to labour, while in 1919 capital's share fell to about 22 per cent, while labour received about 78. Of the total payments to employees in the highly organized industries, the report shows, about 92 per cent goes to the manual workers and clerical staffs, while 8 per cent goes to officials.

Light is shed on the increased income of farmers in the period from 1910 to 1919. Agriculturists, who during the past decade have made up about 16 per cent of the total of the gain fully employed, according to the study, received from 12 to 13 per cent of national income in the years between 1910 and 1916, inclusive.

INCOME TAX DISCREPANCIES.

Income tax discrepancies are also shown in the report, which estimates that the number of persons in 1918 having incomes over \$2,000 was 5,300,000 and that their total income was more than \$23,000,000,000. Income-tax returns, however, showed only 2,908,000 persons having over \$2,000 and their total reported income was less than \$14,000,000,000.

This discrepancy is attributed in part to technical evasions and straight illegal withholdings, but also in part to the existence of tax-exempt income. What this means in terms of the income-tax is that the Government received in 1918 about \$500,000,000 less than it would have, if all persons receiving over \$2,000 had paid their full amount.

How to Produce Clean Milk.

Mr. J. Mackintosh, O.B.E., N.D.A., National Institute for Research in Dairying, University College, Reading, writing on "How to produce clean Milk," in the *Journal of the Ministry of Agriculture* for April 1922 issue, says:—

The production and handling of milk on the farm consists of a long chain of operations which differ materially in nature and in the conditions under which they are carried out. Milk production may be said to begin with the selection of the cows, and

handling, in so far as the average farmer is concerned, to end with the delivery of the churn of milk at the railway platform or the wholesalers' or retailers' premises.

Attention to detail at all stages in the chain is desirable, but it must be helpful to those engaged in the work to know the *relative importance* of the different operations. It cannot yet be said that all stages in this chain have been sufficiently investigated, but it is nevertheless possible to summarise the conclusions are more or less in complete agreement as to the factors which are of prime importance in the production of clean milk. These factors are as follows :

(a) The animals producing the milk, and the workers at all stages, should be in good health and free from any disease which may be carried by milk.

(b) The utensils used should be thoroughly cleaned and sterilized.

(c) The cows, and particularly their udders and teats, should be thoroughly cleaned before milking.

(d) The milking pail should have a small opening, thus lessening the space whereby dust and dirt may fall into the milk.

(e) The milk should be cooled soon after milking to a temperature of 50°. For lower, and maintained at a low temperature afterwards.

Writing of Milking Machines, he says :—Where milking machines are used the question of thorough cleansing is of even greater importance than where only hand milking is practised. All parts of the machine which come in contact with the milk must be thoroughly cleansed at least once daily, and the time required for this work necessarily varies according to the construction of the machine. Those with simply-made teat-cups, the minimum amount of rubber or celluloid tubing, the fewest joints, and with milk receivers without crevices and easily washed by hand, will be most advantageous in this respect, whatever may be their merits or demerits in others.

The mode of washing recommended by successful operators and careful students of this subject is as follows: Immediate after milking clean cold water should be drawn through the teat-cups, milk tubes and receivers, and all parts thoroughly rinsed. They should next be taken to pieces and washed in hot water containing soda or washing powder, the teat-cups, claws and tubes being well brushed inside and out. The teat-cups and tubes should then be fitted together and clean hot water drawn through followed by scalding water or steam. They may then be hung up to drain and dry and left thus until next milking. Another effective method of treatment is to immerse the cups and tubes between milking in clean cold water containing a disinfectant—lime water, brine, and a mixture of brine and lime water have been found most satisfactory in America. When the teat-cups and tubes have been properly washed and steamed after the morning milking, it is sufficient to rinse them thoroughly with cold water in the evening. It is also necessary to guard against contamination of the milk by entrance of water from the vacuum pipes or oil from the pulsator, and to see that badly worn rubber parts are renewed when necessary.

Spread of Agricultural Information in Villages.

Prof. D. L. Sahasrabuddhe, M.Sc., M.Ag., writing in the March number of the *Poona Agricultural Magazine*, says :—

In America once a special train was run through

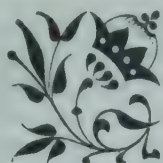
Kansas to combat the Hessian-fly attack on wheat. This fly did a great damage to the wheat crop in 1915. In order to call the attention of the farmers to the seriousness of the attack and also to reach a large number within a short time the Kansas Agricultural College in co-operation with the Railway company arranged for such a tour. The train was fully equipped for demonstrations of the methods advocated. The speakers consisted of three entomologists of the Agricultural College, one entomologist of the U. S. A. Department of Agriculture, the head of the Department of the Agronomy and one county demonstration agent. In addition to these the company consisted of the Agricultural and publicity agents and representatives of newspapers. The train stopped at sixty-two places and everywhere attracted full audience. The time allowed for each stop was of about 40 minutes. The speakers usually arranged for a few minutes' discussion before closing the meeting. Specimen cases, charts and illustrated materials were used in all lectures. As the men left the meeting they were given circulars on the Hessian-fly and the preparation of the seed bed for wheat. The circular was printed primarily for the occasion. It was simply a timely article emphasising the methods of control and closing with a brief history of the fly. In India ordinary bullock cart campaigns would be equally useful. In the above instance one thing which needs special attention is that the campaign was started with a definite object to work against the Hessian-fly. Only one subject was put very prominently before the cultivators for the time being so that they could pay full attention to it.

It must always be remembered that even such methods grow old and lose their power of attracting people. In many places in America the exhibit train has become quite familiar and those who are seeking some new form are equipping motor trucks. In a few years these too may lose their power to arouse curiosity. The fact that the novelty of a device wears off does not necessarily destroy its value. The campaigns leave their impressions behind which may be made permanent by what may be called the follow-up work.

Follow-up work is an important item in making knowledge of permanent use. The purpose of shows and tours is to give information and to create interest in a subject. But all the shows and tours will be useless without the follow-up work. A great man says "when a given appeal is addressed to me I straightway proceed to forget it. But I do not forget it at a uniform rate, so much being forgotten on each succeeding day until all is forgotten. Indeed, I forget the material that has been seen or learned, according to a definite "curve of forgetting" a curve which descends rapidly at first and then more slowly. The larger proportion of material is forgotten in the first day or so. After that a constantly decreasing amount is forgotten on each succeeding day!"

Some of the methods that may be used in the follow-up work are (1) sending an agent to the village in a day or two after the show to talk about the subject, (2) distributing printed leaflets, and (3) organizing local forces.

The methods of spreading agricultural knowledge in the villages will vary with time, place and other circumstances. But there are certain principles which are to be followed. The shows or visits must be arranged for one subject at a time. They should not last over a day at each place and in no case should they be made tedious and the form should be changed from time to time to make them attractive.



Topics from Departmental Reports.



Forest Administration in Bombay.

The following extracts are taken from the Report of the Forest Administration in the Bombay Presidency (including Sind) for the year 1920-21 :—

RESEARCH AND EXPERIMENTS.

Research.—Protection and exploitation of forests and the tackling of the several problems connected with these leave little time to the establishment for research. When even the more urgent engineering problems and revision of working plans have had to be held over for want of staff, no progress in research work can be hoped for until the proposed Working Plan Circle and the Research Officer are sanctioned.

Experiments.—The following work is reported by Conservators under "Experiments":—

Taungya cultivation.—This was tried departmentally in the Kanara Northern and Central Divisions and the School Division, but proved an expensive failure. It was found better in every way to grow the teak without any field crop.

Cultivation of Tarwad was continued in the drier parts of the Presidency proper and the results were good wherever the rainfall was favourable. In the Panch Mahals the majority of the plants from the sowings of 1918-19 are reported to be flourishing in spite of two seasons' drought. With the slackening of the demand for tan products it is inadvisable to incur expenditure on further propagation of Tarwad.

Divi divi planting was tried successfully in the Central Circle. This can, however, produce no results unless done on a commercial scale.

Prosopis glandulosa seedlings have continued to thrive in all nurseries in the Sukkur Division.

Sandal.—The attempt to grow sandal in the nurseries at Sukkur is reported to have failed as the seed cannot stand the hot weather of Upper Sind.

Lac.—Attempts made to propagate lac in the Hyderabad Division produced no results. The winter crop of lac was collected departmentally in Karachi and Hyderabad and the summer crop was left untouched in the hope of securing thereby an appreciable increase in the distribution of this product. This experiment which has led to success elsewhere in India has been tried for the past two winters, but no considerable improvement is yet noticeable.

Propagation of lac in the forests of Mandvi, Surat Division, will be taken up before long.

Rosha grass.—A waggon-load of the grass was sent to Dapuri for experimenting in the Central workshops of the Industries Board with the Rosha oil still at a cost of Rs. 412. That plant has not been found satisfactory and a proposal is on foot to replace it by more effective machinery.

Match manufacture.—The Gujarat Islam Match Manufacturing Company continued their operations in the forests of Halol Range and removed 12,500 c.ft. of Simal, Gugal and Moino at the very low rate of annas 2 a cart load or Rs. 84.6 in all. A proposal to allow the Company to exploit the soft woods in the

Thana forests could not be accepted in view of the necessity to conserve transport for more paying work.

Salai (Boswellia serrata).—In the North Khandesh Division the tapping of the Salai trees was continued on a small scale and 210 lbs. of gum-oleo-resin were sent to the Director of Industries, Bombay. The development of the gum-oleo-resin industry might help to increase the revenue considerably.

Seasoning of timber.—Two sound Bahan logs of the following dimensions were seasoned for three months, one by immersion in water and the other in shade, for an experiment in turnery :—

(1) 10' 6" length 4' 2" girth

(2) 9' 6" length 4' 3" girth

They have been sent to the Executive Engineer, Government Stores and Workshops, Dapuri. The result of the experiment is awaited.

Utilization of Bahan logs.—Many of the heavy Bahan logs felled in the annual coupes are hollow and unsuitable for timber and incapable of being converted as fuel without disproportionate cost. An experiment to convert them into charcoal was made in the Larkana Division but the results leave no margin of profit, the price realizable for charcoal derived from this species being 50 per cent lower than in the case of Babul. The charcoal is also inferior and its yield per unit of wood consumed low.

Lantana.—The Lantana destroying insect from Honolulu, Hawaii, is worth a trial. The Chief Conservator is in correspondence with the authorities there on the subject.

FOREST UTILIZATION.

The following were the chief subjects which received the attention of the Conservator of Forests Utilization Circle :—

(1) *Paper Pulp Industry.*—The company to which a concession for paper pulp manufacture from bamboo in the Kalinadi valley, Kanara, was granted has so far done nothing but has promised either to send out an expert to visit the area next cold weather or give up the concession shortly.

It has been found that the Sar and Kan grasses from Sind forests cannot be relied on for a regular supply of material for paper factory owing to their disappearance at intervals due to failure of inundation and other causes.

Messrs. John Dickinson and Company who have been enquiring about the possibility of utilizing the "Bari" grass from Khandesh for the manufacture of paper were supplied with samples of the grass for laboratory tests in England and their report is awaited.

(2) *Extraction of resin and turpentine from Boswellia Serrata.*—The grant of a license to the Eastern Development Corporation for exploitation of Gum-oleo-resin in Khandesh forests has been under consideration for the last two years, but in the opinion of the Forest Economist, Dehra Dun, conditions are not favourable for starting a profitable industry at present; the Indian production of resin and turpentine though almost equal to the total demand and rapidly increasing, has not been able to secure

the whole of the Indian trade; the scheme for development of trade in *Boswellia serrata* products may be delayed for sometime, until the internal trade conditions improve. In the meanwhile a form of concession finally approved by the Board of Industries is under discussion with the Company.

(3) *Destructive distillation of wood*.—Owing to the existence of large supplies of its products prices are likely to rule low. The possibilities in this Presidency were examined in consultation with an expert and there does not seem much probability of success in view of the low content of the most valuable by-products of Indian woods as compared with European and American woods. Enquiries, however, tend to show that the adoption of more scientific methods of charcoal manufacture may pay. The demand for good charcoal is increasing in Bombay city for cooking purposes, and this also will tend to help the introduction of better methods of preparation of the product than the present crude methods adopted by local contractors.

(4) *Fibres*.—It was thought that fibre from the Talipot palm of the coast Divisions of Kanara was suitable for rope making. Several enquiries were received from Bombay but Messrs. MacNeil and Company, Calcutta, to whom a sample consignment was sent for experimental purposes, declared the fibre useless for rope making. Further tests will be made and if the results prove satisfactory the establishment of a local industry should pay. Seeds of the palm were also supplied to the Director of Industries for experiment in connection with the manufacture of buttons.

(5) *Tans Myrabolams*.—A contract for ten years was given out for the right of collection of myrabolams from the forests of Belgaum and Kanara Divisions with a view to starting a dry extract factory. The amount of myrabolams available in other parts of the Presidency is not sufficient for starting a factory unless supplemented by supplies from the Central Provinces and from Native States. The only other tanning material which has any demand at present is Tarwad bark, for which contracts have been given out.

(6) *Power Alcohol from Mhowra flowers*.—Enquiries as to the quantities available have been received from various firms and statistics as far as available supplied to all enquirers. The flowers do not seem to offer much success as a source of power alcohol; the cost of the raw product landed at convenient centres is prohibitive as compared with the price of the finished product from Java.

(7) *Bobbin manufacture*.—At the request of the Director of Industries enquiries are being made as to woods suitable for the manufacture of bobbins and the best plans to establish factories for the manufacture of the same. The woods so far found suitable are *Populus euphratica* in Sind and *Adina cordifolia* in the Presidency.

Bombay Timber Market.—In spite of the building activities in Bombay, the prices realized for timber at auction sales were below those of 1919-20, though the fall cannot be considered serious when it is remembered that supply of timber for war purposes overseas, which was undertaken by the Department and private dealers on an unprecedented scale, ceased not very long ago. Wholesale buyers now seem to be overstocked with timber bought at high price, and this coupled with shrunken credit and also the import of cheap timber from Siam, Japan and America, has kept the Indian market stagnant. With shipping

freight cheap and the European markets dull Oregon pine and other timbers were imported at comparatively low rates. Successful competition with foreign timber is primarily a question of cheaper methods of *extraction and transport*; these problems are receiving the attention of the Chief Conservator and the Forest Engineer. Supply of timber to the Development Directorate should favourably influence the market and improve the prices obtained at auctions.

Foreign Markets.—As a result of the interest created in England for Indian timbers at the Empire Timber Exhibition held in London last year, the organizers of the Indian section of the exhibition received numerous enquiries regarding supplies of various timbers and consequently arrangements were made with Messrs. W. W. Howard Brothers & Co., 38, Trinity Square, London, for the development of trade in Bombay timbers in the European markets on terms drawn up by His Majesty's Secretary of State on behalf of the Government of India.

Since the visit of Mr. A. L. Howard of the above firm to the timber depots in this Presidency, 650 tons of teak have been sent to England, of which 350 tons were sent before the close of the year under report. The London market owing to the coal strike was unfavourable. Much of the timber is held up awaiting a favourable turn of the market.

Export Facilities.—It has been brought to the notice of Government that Mormugao Port affords the best possible solution as an outlet for Kanara timbers, and Government have approved of the proposal to start a depot there. It may be confidently hoped that this depot though in foreign territory will afford facilities to buyers, and stimulate the market for all kinds of forest produce from Kanara.

Co-operation in Travancore.

Reviewing the progress made by the Co-operative Department during the six years since its organisation, the Travancore Government observe:—

It will be observed that there has been a slow but steady development of the movement in the State. Starting with 9 taluks in 1091, the movement has now spread over all the taluks of the State, except Devicolum. The Registrar reports that even in the last mentioned taluk arrangements were in progress for the starting of a society. Within the same period, the number of societies rose from 26 to 266, while the number of members increased from 945 to 17,237. Agricultural societies naturally predominate over the non-agricultural ones, but the people appear to prefer limited liability societies to unlimited ones. Of the 42 non-agricultural societies actually working at the close of the year, 14 are for the benefit of Government servants, 3 are exclusively for teachers, 3 for Christian fisherwomen and 3 for artisans. The "Parur Co-operative Society, Ltd.," is a new non-agricultural society deserving of mention. It has been formed with the object of promoting weaving as a factory industry, and has begun well. It has already enlisted 294 members with a paid up capital of Bh. Rs. 1,907-14-4 cash. A building has been purchased at a cost of Bh. Rs. 1,354-15-6 cash and appliances have been obtained for the value of Bh. Rs. 704-13-6 cash. During the year, the society purchased raw material and manufactured goods to the value of Bh. Rs. 4,350-21-3 cash and realized by selling raw material and finished products, sums of Bh. Rs. 614-19-15 cash and Bh. Rs. 4,367-25-2 cash respectively. The society

however incurred a net loss of Bh. Rs. 132-25-15 cash on account of the heavy initial expenditure. The working of the society will be watched with interest as on its success largely depends the formation of similar societies for the advancement of a very necessary industry.

Stores societies do not thrive in the country. Three main causes are said to operate against the successful working of these societies *viz.*, (1) lack of proper and capable businessmen, (2) want of loyalty on the part of the members, and (3) absence of credit purchase facilities. Two stores collapsed prior to 1096 and three collapsed in 1096 and the registration of all these had to be cancelled. The number of stores societies has not shown any increase since the movement was started in the State. The Registrar will do well to closely examine the causes and see if he can devise measures to improve the working of these very useful institutions. Very often heavy losses are sustained by these societies by bad management, by the entertainment of a costly staff or by serious fluctuations in prices between the dates of purchase and sale, and a few timely hints by the Registrar and his staff might obviate such losses. It should be the aim of stores societies to confine their operations solely to such articles which could be purchased in bulk and which are likely to be consumed in large quantities, and they should make arrangements to buy the articles required in suitable markets and at proper times. The large amount of overdue loans is another striking feature of the Travancore Societies. It is observed that many of the recently started societies do not go in for loans but that it is the earlier societies that are mostly responsible for the locked-up arrears. The Registrar reports that of the total sum of Bh. Rs. 34,775 over-due to the Bank by Primary Societies, Bh. Rs. 17,342 or nearly half is due from societies Nos. 2, 7, 8, 11, 12, 16, 18, 19, 20, 22, 25 and 36. These are slack in the collection of the sums due to them from their own members and in turn are not prompt in repaying the debts they owe to the Central Bank. These societies were registered on the Raiffeisen model as unlimited liability societies with a nominal share value, and when they started work, the war came in and with it economic distress. Now that conditions have improved, it is reported that some of these societies are trying to repay the loans due by them. It is hoped that they will succeed in this attempt. Another unsatisfactory feature in the working of the societies is the large number of societies that have been working at a loss—as many as 16 societies were working at a loss during the year against 13 in 1095. Of these, 12 are reported to be new ones and the rest old. Of the latter, one society, No. 85 “Vycome Stores,” which has been working at a loss for the last 2 years is proposed to be dissolved during the current year as, in spite of advice and persuasion, the members have been clamorous for its dissolution. Next comes the “Mayyanad Co-operative Society, Ltd.,” No. 94, in the Quilon taluk, which suffered a loss of Bh. Rs. 297-9-3 cash, consequent on keeping a costly establishment. The Aiyroor Co-operative Society”, No. 17, has incurred a net loss of Bh. Rs. 96-3-15 cash; while the Pilapizha Co-operative Society, Alleppey, No. 8, is the next old society which worked at a loss during the year. The Registrar should take prompt steps and see that these societies either improve or are wound up. Of the new societies 12 societies which commenced work late in the year, sustained losses on account of the preliminary expenses they had to meet in providing

themselves with the necessary equipment. The total loss incurred by these new societies was however only Bh. Rs. 230-20-11 cash while that of the four old societies amounted to Bh. Rs. 477-18-15 cash. Eight of the old societies were working without any reserve fund.

Government are glad to note that, as a consequence of the co-operation of the Director of Agriculture and Fisheries, the Registrar was able to organize two societies for fishermen and take steps to attach manure depots to some of the existing co-operative societies.

The Indian Factories (Amendment) Act II of 1922, has been passed by the Government of India and published on pages 58 to 63, Part III, of Fort St. George Gazette, dated 7-2-1922, and will come into force on 1-7-1922. Under the Amended Act, factory means “any premises wherein or within the premises of which on any one day in the year not less than 20 persons are simultaneously employed and steam, water or other mechanical power or electrical power is used in aid of any process for or incidental to making, altering, repairing, ornamenting, finishing or otherwise adapting for use, for transport or for sale any article or part of an article.” Under Section 33 of this Act every person occupying a factory shall, on or before the date on which the factory commences working as such, send to the Inspector a written notice containing full particulars of the factory as are required therein. Failure to send the notice is punishable under section 41 (j) of the Act and the penalty imposed is a fine extending to Rs. 500. Occupiers of such factories are therefore hereby advised to take the necessary steps to send the required notice to the Inspectors of Factories of the respective Circles by the prescribed time.

COST OF LIVING IN MADRAS.

Statistics prepared for the Madras Publicity Bureau with regard to prices in Madras in March show an increase in the cost of living over that in July 1914 of 71·77 per cent and in the cost of food alone of 65·49 per cent.

The figures for the preceding months are as follows :

Month	Cost of living	Food only
February 1922	70%	63%
January 1922	71%	63%
December 1921	74%	68%
November 1921	76%	70%
October 1921	82%	..
September 1921	79%	..
August 1921	75%	..
July 1921	70%	..

Topics in the Journals.

(April 1922)

The Asiatic Review.—Hydro-Electric Power in India (with map) by A. T. Arnell, B.Sc., M.I.C.E.

B. B. & O. Co-operative Journal.—A Bengalee Co-operator's Message from the West, by A. K. Basu, B.A., Manchester.

Hindustan Review.—Indian Fiscal Commission and the Problem Before it, by “Vox Populi.”

Leaders in Finance and Industries.

CHARACTER SKETCH OF THE MONTH.

Hon. John Wanamaker.

Mr. J. A. Stewart writes in the *Boston Journal of Education*:—

The veteran member of Philadelphia's Board of Education is Hon. John Wanamaker, at one time Postmaster-General of the United States and a churchman, philanthropist and merchant of wide repute, and recently elected honorary chairman of the Philadelphia Sesqui Centennial 1926.

Few men have stood as long and so ably in the forefront of big activities.

Church, public, religious and secular education, public service and commerce have all claimed him and received his best. He is as much a preacher and a teacher, as he is a merchant and administrator.

His eighty and several more years have rested lightly upon him. He loves to talk about his experiences at the close of over sixty years of business life.

"To a man of my age," he said, genially, "fifty or sixty years does not seem to be as much as it did when I was twenty-two beginning with the saving of a part of the first money of my own earnings that I was able to put aside. But there are trees in California in the Yosemite said to be 2,000 years old; fish in the sea said to be 500 years old; turtles now and then picked up in the forests that have had their backs scratched with an age of 100 and 200 years. One ought to leave some mark behind him. To love to work and have so many years in active business is a great privilege, and I am glad to be a witness in this high court to the fact that there are compensations in business more valuable than money."

Business in its biggest sense covers the whole range of public utilities, supplying mutual exchange for the common benefit. The great merchant is great in his ideas, in his knowledge of human nature, of affairs, of goods; and in his application of methods.

"What's the big idea?" was the query of a contemporary of Mr. Wanamaker at the opening of his "new kind of a store," over two generations ago. "To do the greatest good to the greatest number," was the reply.

"O, I see!" said the querist, "The greatest number is always 'number 1' which is yourself — or myself."

"You are dead wrong," said Mr. Wanamaker earnestly, "My idea is just the opposite of what you have imagined. I have always believed that if I could make a store where the customers' interests are the first consideration, I would be satisfied with whatever is left for the owner."

It is a matter of record that Mr. Wanamaker has always upheld to the world of merchants at large in this country and abroad the principles of the patron first, the merchant afterward, and has absolutely proved the wisdom of it in winning mercantile success.

"I believe we owe a duty to the communities in which we live to be more than shopkeepers living twenty-four hours a day" is another of Mr. Wanamaker's successful ideas. Business is a science, in his view, and it requires thorough knowledge, scientific

treatment and the far-seeing vision of conscientious, unselfish, broad and patriotic men who love their country, and who can steer affairs not only to avoid the dangerous rocks of falsehood, panics, and depression, but also to inaugurate great movements that promote general prosperity.

His ideas are equally as broad and practical in the field of government as in that of business. Three great expansions of the postal service (for which he blazed the way when Postmaster-General) have been achieved: Rural free delivery; postal savings, and parcel post. To these he would add the telegraph and telephone lines. He would greatly extend the function of the Government that it may serve the people, better, or in other words, that the people may do for themselves things they now leave to private enterprise.

His ideas on moral reforms and on Christianity have been in advance of his time. He has been a teetotaler since 1877, and in all those years he declares he has not taken a drink of liquor. "It was very difficult for me when I lived in Washington, to entertain foreign officials without serving them with strong drinks but none of them ever got anything to drink at my house. I have never found that I missed anything by not drinking and cannot see that anybody else would miss anything by not drinking. The appetite for strong drink is the devil's best weapon and the world's greatest curse."

The preservation of the Sabbath as a day of rest is one of Mr. Wanamaker's most insistent ideas. He regards the sanctity of the Sabbath both from the view point of the Christian and the businessman. "I consider it an absolute hurt to wages," he said (at a recent meeting of the Philadelphia Sabbath Association, of which he is president), "when persons for work which they do on Sunday are given money which ought to be divided with those who are law abiding, who, perhaps, are out of a position because of the very existence of the Sunday work." He has forwarded the time when stores give their employees ("the store family") a whole, instead of the present half Saturday holiday for recreation in order that the Sabbath may be kept strictly for religious service.

"I am willing to confess to you," he said, "that I endeavoured to make a boy's dream a tangible reality, and with unconquerable purpose, I steadily followed the north star that I saw in the sky, from the beginning and through all the years I believe that every achievement was but the starting post to a new endeavour. There are no locks on the doors of wisdom, knowledge, honest enterprise and the opportunities on every side."

Until recently all eggs used in Macedonia for the production of silkworms were imported. Local dealers have succeeded by means of Pasteur methods in raising eggs under conditions as favourable as those prevailing in France and Italy. The local production being still insufficient, however, fully half the total quantity of eggs required for the trade is imported.

Mysore Economic Development Board.

PROGRESS REPORTS

Board of Agriculture.

The following is a summary of the proceedings of the meeting held in the Chamber of the Second Member of Council on Saturday, the 11th March 1922 :—

Present.

Rajamanthrapravina P. Raghavendra Rao, B.A., B.L.
Second Member of Council, (Chairman).

Members.

The Superintendent, Government Gardens.

The Registrar of Co-operative Societies.

The Live Stock Expert.

The Superintendent of Sericulture.

Lieut. Col. W. L. Crawford, D.S.O.

Mr. T. Narasinga Rao.

„ H. Krishna Sastry.

„ G. Girimaji Rao.

„ Purushottam Anandagiri Gosai.

„ R. Gopalaswami Iyer.

„ K. Suryanarain Rao.

„ Nanje Gowda.

„ B. Shama Rao.

„ Nadig Lakshman Rao.

1. *The question of taking necessary action on the recommendations of the Indian Sugar Committee.*—

The Chairman suggested that, as the question was an important one and as Dr. Coleman whose views on the subject were quite essential for its consideration was unavoidably absent, the same may be deferred for consideration at a future meeting of the Board. All the members agreed to the suggestion and the question was accordingly deferred.

2. *Recommendation of the Sub-Committee for the development of Sericulture regarding the formation of a Silk League in Mysore.*—The Chairman briefly referred to the previous history of the question and requested Mr. N. Rama Rao, Superintendent of Sericulture, to explain the object of the scheme more fully for the benefit of the members of the Board.

Mr. N. Rama Rao accordingly explained in detail the necessity for the formation of a Silk League in Mysore and referred to the varied benefits accruing to silk dealers who would become members of the League. He read out and explained the various items of the draft constitution of the League which had been printed as an Appendix to the Proceedings of the Sub-Committee for the development of Sericulture held on the 17th December 1921 of which copies had already been circulated to the members of the Board. He particularly emphasised the need that existed for standardising Mysore silk into definite grades of uniform quality and for pushing its sale through the medium of the proposed League in the best markets of the world. He gave details about the subscription for membership to the League and also the establishment and other charges required for running the same and urged the support of the members to the resolutions of the Sub-Committee regarding the formation of the League and the desirability of approaching Government for a subvention for the purpose.

The Chairman wanted the members to take note of the fact that, while he admitted the laudable objects of the proposed League, he had his own doubts about Government contributing any funds towards its formation in the existing financial stringency. He added however that he would not have the slightest objection to Government being approached in the matter if that was the general sense of the Board.

After some further discussion, it was resolved that the Resolutions of the Sub-Committee for the development of sericulture in the matter of the formation of a Silk League with subvention from Government be commended to Government for favourable consideration.

III. The Proceedings of the meeting of the Sub-Committee for Sericulture held on the 10th March 1922 were next taken up for consideration.

(1) In regard to the first Resolution passed at the meeting regarding the *levy of an ad valorem duty of one anna in the rupee on reelable cocoons exported from the State*, the Chairman remarked that he had reason to believe that this subject was likely to come up for consideration before the Special Finance Committee and explained that the object of the levy of the duty was to protect the silk industry in Mysore.

Mr. N. Rama Rao explained in detail the necessity for the levy of the cess.

Mr. R. Ranga Rao wanted to know whether the realization from the duty would be ear-marked by Government for expenditure on the improvement of silk reeling in the State.

The Chairman explained that it was opposed to accepted financial practice to ear-mark particular items of revenue for particular items of expenditure.

Mr. R. Ranga Rao thereupon moved the following amendments to the Resolution of the Sub-Committee :

(a) The words “two annas in the rupee” to be substituted for “one anna in the rupee.”

(b) The words “the realizations be utilized as far as possible” be substituted for the words “the realizations be ear-marked.”

Mr. N. Rama Rao having seconded the above amendments, the 1st resolution of the Sub-Committee as amended above was put to the vote and carried.

(2) *Proposal to require Patels in villages to report the outbreak of silkworm epidemic diseases to the Superintendent of Sericulture.*—In regard to the Resolution of the Sub-Committee on this subject, the Chairman suggested the desirability of the Revenue Commissioner being consulted before any definite action was taken and the suggestion was accepted by the Board.

(3) *Proposal to require Shanbhogues to supply the Superintendent of Sericulture with statistics relating to acreage under mulberry and the number of reels working in villages.*—In regard to this Resolution, the Chairman pressed the same view as above and the Board agreed to the Revenue Commissioner being consulted before any action was taken in the matter.

(4) *Proposal regarding the grant of lands for the encouragement of mulberry estates and topes.*—In connection with this Resolution of the Sub-Committee,

the Chairman invited the attention of the members of the Board to the recorded proceedings of a previous meeting at which the Revenue Commissioner had raised an emphatic protest against the grant of *gomal* lands for mulberry *topes* and asked the members if they would like to press the matter again.

After some further discussion, it was resolved that the matter be referred to the Revenue Commissioner for opinion before any further action was taken on the subject.

(5) *Proposal regarding the formation of a Sericultural Farm on the area irrigated by the Krishnarajasagara Dam.*—The Chairman made it clear to the members at the very outset that no grants could be expected from Government for the formation of such a farm in the existing financial stringency and the proposal would remain a dead letter unless the Sericultural Department could find funds for it from its normal grants.

Mr. H. Krishna Sastry explained that several blocks of land on the area irrigated by the Krishnarajasagara Dam had been reserved for Experimental Farms and added that, before all the blocks were disposed of, it was desirable to get one reserved for a Sericultural Farm to be opened when funds were available.

Mr. Purushottam Anandagiri Gosai wanted to know why a block should not be reserved on the Nagenahalli Agricultural Farm instead of under the Krishnarajasagara Dam.

After some further discussion, it was resolved that Government may be asked to reserve a block of 10 or 15 acres under the area irrigated by the Krishnarajasagara Dam for purposes of a Sericultural Farm.

IV. *Revised Note by the Director of Agriculture on increase of agricultural production in the State.*—Deferred owing to the unavoidable absence of Dr. Coleman.

V. *Grant of greater facilities for the development of cocoanut cultivation in the State.*—The Chairman read out the subject as discussed at the Representative Assembly by Mr. Singri Nanjappa of Tiptur and asked for the views of the Board in the matter. He explained that what was wanted by Mr. Singri Nanjappa was the free supply of 100 cocoanut plants from Ceylon to enable him to plant them on his own estate and conduct experiments regarding their growth.

Mr. Krumbiegel expressed doubts about Ceylon cocoanut plants thriving in these parts.

Mr. H. Krishna Sastri said that there was no reason why, if Mr. Singri Nanjappa wanted to conduct experiments with these plants on his own estate, he should not pay for the plants himself.

After some further discussion, it was resolved that a reply be sent to Government to the effect that the Board were not in favour of Mr. Singri Nanjappa's request being granted.

VI. *Application from Mr. V. R. Gadgil of Punjab re concessions for starting a Fruit Preservation Factory in Mysore.*—Before calling for the views of members, the Chairman explained that the application was vague and the policy was to encourage local enterprise as far as possible.

Mr. Krumbiegel thought that it was best to use fresh fruits as far as possible and it was only when the supply was far in excess of requirements that preservation or canning should be resorted to. The supply of fruit in Mysore was in his opinion quite insufficient and even then much of it was exported

in bulk to Bombay, Madras and other places, for immediate consumption.

The Chairman added that there was already a Fruit Canning Company in Bangalore and the industry was such that work could not be expected to last all the year round.

After some further discussion, it was resolved that Government may be informed that the Board are not in a position to give their opinion unless more specific information is received as to what exactly the applicant wants and that in their opinion there is no scope for the industry in the State.

VII. *Promotion of Village and Agricultural Association and Labour Unions in towns and villages.*—The Chairman invited discussion on the following opinion furnished by Dr. Coleman on the subject:—

"I do not think that any useful purpose will be served by attempting to establish Agricultural Associations where a real demand for them does not already exist. Our experience has been that the most useful organized work in connection with agricultural improvement is done by already existing co-operative societies and I believe we should pin our faith to these societies. During the past year, no less than fifty-five co-operative societies in the State were engaged in some form of agricultural work. Most of these took up the work of introducing improved varieties of crops while some also took up the work of introducing improved implement and manures. Efforts to organize special seed growers' association met with very little success. Under these circumstances, it seems to me advisable to devote our chief if not our whole attention to enlisting the services of existing Co-operative Societies for the work of agricultural improvement.

Mr. Gopalaswamy Iyer stated that the country was not ripe for Labour Unions, Mr. T. Narasinga Rao agreed with Dr. Coleman's views and so did Mr. H. Krishna Sastri and the Board also accepted the same.

VIII. *Planting of avenues solely with fruit trees.*—Mr. Purushottam Anandagiri Gosai urged the desirability of planting road side avenues solely with fruit trees. Mr. Krumbiegel thought that what was now being done in regard to planting of avenue trees was about the best and that one or two more varieties of trees might with advantage be introduced; what was important in his opinion being the planting of trees after growing them in a nursery to a height of about eight feet and then taking care of them.

The Chairman invited the attention of the members to the Rules already existing on the subject (page 85 of the *Mysore Revenue Manual*) according to which "such trees as grow well in the neighbourhood of the locality and as far as possible useful fruit and other trees affording good shade should be chosen to supply vacancies among avenue trees" and added that no fresh action was called for as there was very little chance of new roads being formed in the existing financial stringency.

Mr. Nanje Gowda was in favour of planting trees that gave shade to travellers and fruit to birds, while Mr. Girimaji Rao advocated the planting of *Honge* and tamarind trees.

After some further discussion, it was resolved that the existing Rules on the subject were quite ample and no further action was called for.

D. C. SUBBARAYAPPA,
Secretary.

P. RAGHAVENDRA RAO,
Chairman.

ANNEXURE I.

Letter No. R.O.C. 404 C. 637-2, dated the 9th December 1921, from the Director of Agriculture in Mysore, to the Secretary to the Government of H. H. the Maharaja of Mysore, General Department, Bangalore.

INDIAN SUGAR COMMITTEE'S RECOMMENDATIONS—
DIRECTOR'S OPINION.

With reference to your letter No. I. C. 3312-15—I. & C. 133-21 of the 7th instant, I have the honour to state that my evidence both oral and written which was presented to the Indian Sugar Committee has, I believe, already been forwarded to Government. This evidence should be read in connection with the report of the Committee. I shall deal seriatim with the conclusions reached by the Committee and laid down on pages 166 and 197 of their report.

(1) Everybody must agree with this conclusion. With regard to larger irrigation works, I think there is very little to say beyond what is already known, viz., that they should be pushed forward as rapidly as funds will permit. With regard to ensuing perennial irrigation under tanks, there is undoubtedly great scope for developing a system of subsidiary well irrigation in the case of tanks which hold a water-supply of from six to nine months. Work in this direction has been left almost entirely to the initiative of the raiyats themselves many of whom have no knowledge of well construction and have the greatest difficulty in getting wells constructed. I consider that the Agricultural Engineering Section of the Department should be greatly strengthened so as to provide a staff for taking up this work. I may point out that in many other parts of India the most promising work that has been done in connection with Agricultural Engineering has been in connection with well construction. The conditions here are not so favourable as, say, in the United Provinces but undoubtedly a great deal could be done here in the way of supplying subsidiary irrigation facilities. There is little doubt in my mind that we should be able to double our area under cane by this means alone.

(2) I have nothing to say with regard to this conclusion.

(3) The conclusions with regard to the Marikanave area are, I believe, sound as regards the last item. With regard to water-supply and shortage of labour, I do not consider these are really serious difficulties.

(4) I have had in view the carrying out of land improvement experiments in the Babbur Farm and in fact much work has already been done in this connection. I have recently purchased a drain excavator which I proposed to use in constructing permanent drains on the wet area. However I have not taken up this work for fear that the present unfavourable balance sheet will be affected still unfavourably. Land reclamation involves the expenditure of considerable sums and unless Government can see their way to accept this fact, I am not prepared to take up the work except on a very restricted scale.

(5) I do not agree that the area under Sulekere Tank is too small provided that the water-supply is assured. I believe however that the whole area would have to be acquired for the purpose. If this were done, I feel fairly certain that the water could be conserved so as to make it sufficient for the whole area allowing for the necessary rotations. I have not taken up the detailed inspection of this area on account of the very conflicting statements which have been made by presumably competent officers on the question of water-supply. I did not want to waste

time on a question which after all seemed to turn on that and that alone.

(6) I agree with this conclusion. The evidence received by the Sugar Committee showed quite clearly that the necessary preliminary investigations had in many cases not been made before the installation of pumping plants. The Agricultural Department has a competent staff and has in addition a knowledge of agricultural condition and the confidence of the agricultural populations to an extent that no other Department of Government has. It seems to me clear therefore that they can carry out the investigation work more satisfactorily than any other department. I personally believe that the whole work should be handed over to them and the Engineering section strengthened accordingly. This is the course that has been followed in most parts of India.

(7) I agree in the main with this conclusion.

(8) I disagree with this conclusion. The agricultural conditions in the Goribidnur Taluk are, it is true, very favourable for the growth of cane but I believe it will be difficult if not impossible to acquire a sufficiently large area there which can be economically irrigated.

(9) I do not know enough about the Date groves of the State to express an opinion. The Malnad would hardly furnish a compact area suitable for the establishment of a sugar factory. There is, however, I believe, scope for considerable extension of sugar-cane growing in that part of the State.

(10) I agree with this conclusion in so far as the investigation of possibilities of improving irrigation facilities is concerned.

(11) I agree with this recommendation.

(12) This refers to experiments which are being conducted by the Agricultural Department with reference to the optimum quantity of manure for sugar-cane. Every one knows that where the supply of manure is insufficient a quantity less than the optimum will have to be used but the facts are that considerable quantities of oil-cake fertilizers and very large quantities of oil seeds are at present being shipped out of the State. Furthermore, some of the sugar-cane growers in the State are at present using quantities of manure in excess of the economic optimum and it is necessary for the Agricultural Department to be able to speak with some certainty on this point.

(13) I do not quite know what this conclusion means. Work on drainage is in progress on our farms and fairly definite information is available. No definite experiments on water requirements have been taken up owing largely to questions of expense. Information re rotations is available although more work in this direction requires to be done.

(14) I quite agree with this recommendation. Although we have not yet been able to place this farm on a self-supporting basis, that aim has been constantly kept in view and as a result, much valuable experimental work which would otherwise have been taken up has been excluded from the farm.

In conclusion, I may say that I consider experiments on jaggery manufacture on the lines laid down by the Committee should be taken up and I believe the Agricultural Department is the agency best equipped to carry out this work.

ANNEXURE II.

Letter No. M. 4330, dated the 9th December 1921, from the Chief Engineer of Mysore, to the Secretary to the Government of H. H. the Maharaja of Mysore, General Department, Bangalore.

With reference to your letter No. I. C. 2450—I. & C. 347-29-194, dated the 28th October 1921, regarding the possibilities of establishing a Sugar Factory under the Sulekere Tank in the Channagiri Taluk, I have the honour to state that the area under irrigation below the tank is 3,700 acres of which 700 acres seem to be under sugar-cane cultivation. The yield from the catchment is estimated to be about 5,436 units against the tank capacity of 11,994 units. If allowance is made for losses due to evaporation and percolation, the average yearly supply is sufficient only for the existing area. The tail water from the existing irrigation is estimated to be about 756 units which by economical distribution of water may perhaps be used for a further extent of 700 acres of sugar-cane. In any case, it will not be possible to supply water to an additional extent of 3,000 acres of sugar-cane, which is required for the proposed Sugar Factory.

2. In this connection, a reference is invited to paragraph 223, page 163, of the report of the Sugar Committee appointed by the Government of India, wherein they do not advise the starting of a Sugar Factory below this tank.

Sub-Committee for Sericulture.

The following is a summary of the Proceedings of the meeting of the Sub-Committee (of the Board of Agriculture) for Development of Sericulture held in the Office of the Director of Agriculture, Bangalore, on Saturday, the 17th December 1921 :—

Present.

The Director of Agriculture (*Convener*).
The Superintendent of Sericulture.
The Registrar of Co-operative Societies.
Mr. G. Girimaji Rao.
„ H. Krishna Sastry.
„ K. Suryanarayana Rao.
„ S. Hampaiya.
„ M. S. Devoji Rao.

The Secretary, Board of Agriculture.

The draft constitution of the Mysore Silk League, prepared by the Superintendent of Sericulture, was discussed in detail and adopted with modifications. The draft constitution, as modified, is given as an appendix to these proceedings.

It was further resolved that—

(1) in the opinion of this Sub-Committee, it is necessary for the development of Mysore Sericulture, that a League should be established on the lines indicated in the rules ;

(2) the annual expenditure of the League may be estimated at Rs. 7,000 to start with, as per details given below :—

House rent —		Per month	
		Rs.	
Bangalore Rs. 50	} 170
4 Depots @ Rs. 30-120	
Staff—			
Secretary 100	} 170
Expert Lent	
Clerk 50	
Peons 2 @ 10 20	} 60
Bangalore 4 Depots			
Contingencies 20+40..	
Honoraria 5 @ Rs. 20	100

4 Depots and 1 Agency		
Printing charges	..	75
Total	..	575
For 1 year Rs. 575 x 12	..	6,900
or in round figures	..	7,000

(3) In the opinion of the Sub-Committee, the work of the League is of sufficient importance to require a large measure of assistance from Government, and the Sub-Committee strongly recommend that, for a period of five years, Government may contribute to the funds of the Committee a sum equal to that realized in the way of subscriptions subject to a minimum of Rs. 3,000 per annum.

(4) The Sub-Committee recommend that in the first instance the Department of Sericulture may lend to the league the services of a silk grading expert, with such apparatus as may be necessary for his work.

(5) The other staff, *viz.*, the Secretary, the clerk and the menial establishment, will have to be paid from the outset.

LESLIE C. COLEMAN,
Convener.

APPENDIX.

Draft of constitution of Mysore Silk League.

1. An Association of Silk Merchants shall be formed with Headquarters at Bangalore under the designation of the *Mysore Silk League*.

2. Membership of the League shall be open to all subjects of the Mysore State who are engaged in any branch of the sericultural industry and to all registered associations within the State connected with Sericulture.

3. The function of the League shall be to co-ordinate the production of silk in the State with the demand for it in India, by—

(i) standardising Mysore silk into definite grades of uniform quality ;

(ii) popularizing the use of Mysore silk and introducing it in new markets ;

(iii) studying prices, and publishing periodical price lists of standard qualities of Mysore silk for the information of producers and consumers ;

(iv) regulating production after ascertaining the requirements of consumers.

(v) rendering reliable supplies of Mysore silk available in the principal trade centres, and opening depots for sale ;

(vi) securing that supplies of silk to the markets of India are punctual and true to sample ;

(vii) Starting Co-operative Societies of rearers and reelers throughout the State.

4. The League shall be managed by an Executive Committee consisting of not more than 15 members. The Registrar of Co-operative Societies and the Superintendent of Sericulture shall be *ex-officio* members of the Executive Committee.

5. The League shall have to start with an establishment consisting of a *Secretary*, a silk grading expert, a clerk and two peons.

6. Depots shall in the first instance be established for the sale of Mysore silk at :—

Kumbakonam, Conjeeveram, Salem, Permakudi, and agencies established at such other places as may be determined from time to time.

7. The annual subscription for membership shall be Rs. 12 in the case of individuals and Rs. 24 in the case of institutions payable in advance in half-yearly instalments.

8. Membership of the League shall carry the following privileges :—

- (i) Getting silk graded by the League.
- (ii) Selling silk at the Depots and through the out-agencies with the League's guarantee of quality.
- (iii) Receiving periodical price lists and other publications.
- (iv) Taking part in the annual deliberations of the League and determining its quality for the next 12 months.
- (v) Electing non-official members of the Committee of the League.

N.B.—The League may frame rules fixing the conditions subject to which the privileges shall be exercised, such as the sorting, baling, and transport charges to be paid on exports, etc.

Board of Education.

The following is a summary of the proceedings of the Twelfth meeting of the Board of Education held at 12 noon on Saturday, the 11th March 1922, in the Chamber of the Third Member of Council, Public Offices, Bangalore :—

Present.

Mir Humza Hussain, Esq., B.A., B.L. (*Chairman*).
The Inspector-General of Education.

K. Chandy, Esq., B.A.

Rao Bahadur M. C. Ranga Iyengar, B.A.

D. Kongadiappa, Esq.

C. Krishna Rao, Esq., B.A., B.L.

G. Devoji Rao, Esq.

A. Anantaiya, Esq.

C. Madhava Rao, Esq., B.A., LL.B.

Jade Subba Rao, Esq.

Praktanavimarsa Vichakshana Rao Bahadur

R. Narasimhachar, M.A.

Mrs. Srirangamma, B.A.

G. A. Kalami, Esq.

K. Srinarasimhaiya, Esq., M.A., L.T.

A. K. Yegnanarayana Iyer, Esq., M.A.

G. Ramappa, Esq.

S. Venkatesaiya, Esq., B.A., B.L.

Before commencing the regular business of the meeting, the Chairman expressed his sorrow at the sudden and premature death of the son of Rao Bahadur M. Shama Rao, a well-known educationist and an old member of the Board, and proposed that a message of condolence may be sent to him in token of the sympathy which the Board felt with him in his bereavement.

Rao Bahadur M. C. Ranga Iyengar seconded the proposition which was carried unanimously.

I. *Recommendation of the Sub-Committee for women's education regarding revision of the curricula of Girls' Schools.*—The Chairman said that the subject was brought up for discussion at the last meeting of the Board and as it was proposed that some of the ladies interested in the subject may also be invited to attend the discussions, the consideration of the subject was deferred for this meeting. He observed that the curricula of primary schools for boys had been framed by the Education Board and had been sent up to Government for approval. The formulation of the curricula for Girls' schools had been referred to the Lady Sub-Committee, with Mrs. Srirangamma as convener.

He read the proceedings of the Sub-Committee and observed that the ladies desired to extend the primary

course to five years, while the orders on the Education Memorandum contemplated only a course of four years.

Mrs. Srirangamma remarked that the Sub-Committee did not frame the recommendations on the basis of the orders on the Education Memorandum and that the idea was to maintain the existing course of 8 years and change the curricula to make it self-contained. As some of the recommendations were against the spirit of the orders in the Education Memorandum, it was resolved that the Inspector-General of Education may be requested to frame a syllabus for primary girls' schools which may be referred to the Ladies Sub-Committee for making suitable suggestions.

Rao Bahadur Ranga Iyengar and Mr. Kalami suggested that a few more ladies may be added to the Sub-Committee.

II. *Institution of a Secondary Grade School Final Examination for women.*—The Chairman said that there was not complete information as to why such an examination was proposed to be instituted and what its advantages are.

The Inspector-General of Education observed that the examination would have papers identical with those of the public examination of S. S. L. C. The main difference appears to be that even girls who do not attend schools are allowed to appear for the examination which does not insist, as the S. S. L. C. Scheme, instruction in schools.

Mr. Kalami said that the same may also be extended to the University Course.

Mr. Srinarasimhiah said that as the present system insists certain courses in schools there would be no facilities to appear privately for the examination.

The Chairman said that as the holders of the certificates are not entitled for admission into the University Course, it is not clear what a certificate is likely to lead to.

Mr. Yegnanarayana Iyer thought that it may perhaps be a passport for becoming school mistresses and clerks.

The Chairman said that at best the suggestions would only be conjectures. He therefore proposed that the subject may be deferred till complete information is obtained as to why the examination of the kind proposed, was to be instituted, what advantages are claimed for the same and what it is likely to lead to. He said that if the information obtained on these points is found useful, the matter will be placed before the Board for discussion.

III. *Board of visitors for Hindustani Schools.*—Letter No. 728—Edn. 84-15 dated 12th August 1921 from the Chief Secretary to Government, forwarding copy of the Inspector-General of Education's *re* draft notification defining the constitution and functions of the visitors of Hindustani schools.

The Chairman wished to know how the village committees were working.

The Inspector-General of Education said that he did not know much about them.

The Chairman observed that past experience has shown that the working of these committees is anything but satisfactory. The individuals that really take any interest in the work will be very few. It has in some cases ended in conflict between the school masters and the committee members.

Mr. Kalami said that it all depended upon the selection of members made, that such committees will give the members some training and as Government have accepted the principle to appoint such committees, there is no question of going back.

The Chairman said that he was sceptical as to the result. It was doubtful whether such committees will really advance the interest of the Mahomedan Education. It is also problematical whether Mahomedans possessed of necessary qualifications could be found in places other than Bangalore and Mysore. The school masters will resent the interference of such an agency and an unpleasant situation is likely to be created.

Mr. Kalami remarked that they would not interfere with the working of the school but would be only an advisory body.

Mr. Srinarasimhiah suggested that some localities may be selected wherein the scheme may be tried.

The Chairman said that they were recommending a course in which there would be conflict between the departmental officers and the committee members. He was himself a chairman of some of the committees and the position became so unpleasant that he had to resign.

Mr. Kalami said that this must have happened long ago, and remarked that something must be done in this connection, so that people could work it properly.

The Inspector-General of Education said that such a scheme could only be introduced in taluk headquarters and in villages.

The Chairman said that unless there was cordiality between the masters and the committee members, nothing useful could be done. One part in the village will take up the cause of the master and the other will try to discredit him. So far as he was aware, there was no instance where it was a success and he suggested that the Inspecting Officers may be consulted and their opinion obtained.

After some discussion, the Inspector-General of Education promised that as he was going through the whole question of the village committees, he will also go into the question of the formation of such visiting boards of Hindustani schools and submit a report.

IV. *Parent-Teacher Associations.*—The Chairman gave a short history of the case and read the draft rules relating to Parent-Teacher Associations.

After discussion, the rules were adopted.

V. *Letter No. 3229, dated 18-19 November 1921, from the Inspector-General of Education in Mysore, pointing out the items of work referred to in the Government Order on the Education Memorandum requiring immediate attention.*—The Chairman remarked that so far as the syllabus and curricula of studies of Primary Boys' Schools were concerned, the Board had already sent up a draft to Government which has been approved by them recently with slight modifications. The draft of the syllabus for Girls' Schools has been referred to Ladies' Sub-Committee and the Inspector-General has also been requested that he may prepare the draft and send the same for consideration by the Ladies' Sub-Committee. The question whether it is not desirable to make the Primary Course of Education a complete one in itself in view of the fact that the vast majority of pupils stop receiving education at that stage, was under consideration when the duration of the period of the Primary Course was under discussion and the course has been fixed at four years specially with a view to make it sufficiently long and continuous so as to give, by the time it is completed, the rudiments of education entitling the pupils to be considered literate. The Board is not competent to say anything about item No. 6 regarding the selec-

tion of text-books as it is a matter within the province of the Text-book Committee.

VI. *Letter No. 574 dated 17th February 1922 from the Inspector-General of Education forwarding the reports submitted by the Circle Inspector of Schools in Bangalore and Mysore, re. the Education of Factory Children.*—The Chairman gave a short history of the case and read the recommendations of the Sub-Committee for Elementary Education on the Education of Factory children. He said that in the Board Meeting held on 19th December 1921 it was proposed to request the Education Department to furnish the Board a report as to the actual working of the schools in the mills. The report now received from the Inspecting officers disclosed an unsatisfactory state of affairs and that some arrangement must be made to put them on an efficient basis. It was decided to send a copy of the report to the Mill Authorities and request them to improve the schools.

VII. *A Note by Mr. Srinarasimhaiya, Headmaster of the Government Collegiate High School, Bangalore, on "Term Promotions." in Primary and Middle Schools.*—The Chairman called upon Mr. Srinarasimhaiya to explain his note.

Mr. Srinarasimhaiya said that according to the present arrangement a student has to spend sixteen years in the primary, secondary and university courses to take a Degree. Assuming that a student begins his education at five and also assuming that he would pass without failure every year, the age when he would take up his degree will be 21. In some cases owing to some domestic troubles or to ill-health at the time of the examination it is possible that the student will be detained in a class for more than one year in which case the age when he can take the Degree will be correspondingly higher. If after taking the Degree, the student desires to qualify himself in some professional course like Medicine and Engineering, he will have to spend another four or five years so that by the time he completes his scholastic career, his age will be almost 28 or 30. There are some boys so intelligent as to grasp the whole year's portion in a term. If such boys are detained in a class on account of circumstances beyond their control, they will have to cover the same ground during the next year, with the result that the intelligent boys will neglect their studies and their enthusiasm will not be aroused so that it is possible they will become dull boys. In such contingencies, the boys may be promoted to the next higher class in the next term, if the system of term promotions is adopted. He explained the method by which the arrangement could be worked out. The eleven months of the working period may be conveniently divided into two terms, five and a half months each. During the first term, $\frac{2}{3}$ of the promotion prescribed for the year may be done, the remaining portion being reserved for the next term. In the second term, a month and a half or two may be given for revision of the two-thirds of the portion already done and the remaining period utilized for doing the one-third portion.

The Inspector-General of Education said that the student would be obliged to make up, after being promoted to the higher class, one-third portion of the class from which he is promoted and two-thirds of the class to which he is promoted.

Mr. Srinarasimhiah argued that the student would conveniently do it as the lessons in the higher class would be revised for a period of two months.

Mr. Krishna Rao was of opinion that this arrangement would overtax the energies of the student,

Mr. Srinarasimhiah said that there would not be much difficulty as those who are promoted are very intelligent boys whose capacity for grasping things quickly has been tested.

Mrs. Srirangamma remarked that the working period was not eleven months but only eight months and that she was doubtful whether two-thirds of the portion could be finished within four months.

Mr. Srinarasimhaiya said that it was eight months only in the case of High Schools and it was eleven months in the case of Primary Schools.

Mr. Krishna Rao said that whatever may be the advantages claimed for this arrangement, there is no doubt that this will not be in the interests of the boy himself because he will have to make up a large portion of the work in a short space of time and this undue strain on his mental capacity is likely to make an intelligent boy, in a few years, an average boy, so that he will be obliged to stop more than a year in the higher classes.

Rao Bahadur M. C. Ranga Iyengar said that so far as literature was concerned, the scheme may work well but with regard to other subjects it was rather difficult.

Mr. R. Narasimhachar observed that the system may be possible in advanced countries like America but not in India where education was not so well developed.

Mr. Srinarasimhaiya said that he felt no difficulty in the matter. To put it concretely, out of 90 lessons in a reader, sixty lessons would be done in the first term and the 30 lessons in the second term. And he said that only a revision usually made at the end of the year was done at the commencement of the second term.

Mr. Krishna Rao remarked that in such cases, the average boys will be made to suffer on account of the intelligent boys for the portion would be rapidly done in the classes.

Mr. Chandu proposed that two sections may be opened in each class to avoid this disadvantage.

The Chairman said that such a proposal was out of question as the cost would be prohibitive.

Mrs. Srirangamma said that in the case of intelligent boys who deserved special treatment, a system of double promotions may be resorted to.

The Chairman observed that double promotions were not desirable for there would be a gap in the course of study as the student would not have studied the portions of the intermediate class.

The Chairman said that as the subject was a very important one, it may be thoroughly discussed in a committee consisting of one or two Headmasters, one or two District Inspectors and a Primary School teacher.

The Inspector-General of Education was requested to select some members.

It was agreed to constitute a committee of the following members :

Mr. Srinarasimhaiya (Convener).

„ Venkatasubbaiah, District Inspector.

Dr. Paul Chinnappa.

Mr. Seshagiri Rao, Headmaster, A. V. School.

„ D. Venkataramaiya, Circle Inspector.

Mrs. Nanjamma.

Mr. Fuller.

The meeting came to a close at 3 P.M.

MIR HUMZA HUSSAIN,
Chairman.

U. P. Board of Industries.

A meeting of the Board of Industries was held in the Technical School, Lucknow, on the 27th. There was a big programme on the agenda paper. After the minutes of the two previous meetings had been confirmed, the Board unanimously approved of the proposal of the Government of India to charge Rs. 30 fee for testing lightning conductors attached to magazines and petroleum godowns and Rs. 15 for every subsequent act of re-testing. As regards the question raised by the Director of Industries, Bombay, about charging fees from private industrialists who apply for help, the Board was of opinion that advice as a rule should be given free except in those cases where considerable expenditure would be involved in making experiments; it should be left to the discretion of the Director of Industries to fix the amount that should in such cases be paid. The Board by a majority resolved that discretion be allowed to the Director of Industries to grant certificates about the quality of goods sent to the department for analysis and report.

The Board appointed three sub-committees to investigate and report on measures which should be taken to develop the industries of vegetable oil, manufacture of glass and essential oils. Mr. Srivastava's resolution as regards carrying out of an exhaustive survey of the mineral resources of the U. P. in collaboration with the department of Geological Survey for India was put off for consideration to the next meeting. Mr. Srivastava's resolution that the Government be asked to allow the Board of Industries to elect a non-official chairman from amongst its members was thrown out in the absence of a seconder. The Board resolved to give Rs. 700 as grant-in-aid of non-recurring character to the Vaish Orphanage, Meerut, for supplementing existing machinery in the Carpentry and Tailoring Sections. The application of the Ganges Ice and Ginning Mills, Ltd., Cawnpore, for financial assistance to enable them to open weaving factories in villages, as well as that of Mr. Yusuf of the London Mission, Almora, for assistance to enable him to improve his mechanical toys, were refused.

The memorial of certain gentlemen of Kumaon for assistance to enable them to erect a Hydro-electric plant in the Kosi Valley was considered, and it was resolved that the proposal be recommended for the consideration of the Development Board.

Admission to Pupils.

The following Order No. 3824-29—Edn.395-21-2, dated 11th April 1922, has been issued by the Mysore Government:—

After a careful consideration of the representations in the Representative Assembly, Government are pleased to direct that institutions started in the interests of any particular community restricting admission to pupils of that community on grounds of religious belief, social customs or other reasonable cause, may be declared eligible for grant-in-aid subject to the usual rules of recognition, etc.

2. The following rule will accordingly be inserted in the Grant-in-aid Code.

"No school shall be eligible for a grant-in-aid under these rules which is not open to all communities. An exception may be made in the case of schools started in the interests of any particular community restricting admission to pupils of that community on grounds of religious belief, social customs or other reasonable cause."



Books in Brief.

SHORT REVIEWS OF RECENT BOOKS.



On the Theories of Free Trade and Protection.

A Survey and a criticism, by Fabian M. Von Koch, Assistant Lecturer at Høndelshögskolan, Stockholm. Published by Messrs. P. S. King & Son, London. Price 1s.

This was a paper presented to the Third International Free Trade Congress, Amsterdam, September 13-16, 1921. It is a timely discussion of the theories of Free Trade and Protection. The War has strengthened the sentiments of nationalism and protection, but this little study emphasises the world's need of Freedom of Trade to offset the suspicion and selfishness of the war period. The author freely admits that it is conceivable that duties for certain purposes (as duties against luxury, for "key" and "infant industries") may be advantageous, but, he says, these aims can be furthered much better and with less disadvantage by other means than by duties. "Duties and other obstructions to international exchange are as a matter of principle unreasonable expedients for purposes which themselves are not always unreasonable." Von Koch says: "As a matter of fact there does not exist at present any consistent Theory of Protection corresponding to the Theory of International Trade as expounded by Free Traders." The chief protectionist argument is stated thus: "In the writings of many Protectionist authors the opinion will be found, first, that it is desirable that more of a country's and of a people's resources should be utilized, and to a higher degree, than is the case at present; and, secondly, that protective duties may be good means for this purpose." The real question is—whether or not Protection can be advantageous for a country while it lasts. The answer given is: "What Free Traders contend is, that the maximum of production, and of employment which is necessary to production, is to be obtained by allowing everyone to produce, sell and buy as his own interest dictates; that any interference with this freedom is a restriction not only on consumption, but on production; and that any such restriction must diminish the aggregate production and employment, as well as the consumption of the country."

Another question discussed was "whether it is certain that the National Dividend will always be greater under Free Trade than under Protection even in a country where different groups have different interests. Our author says—"The result of Free Trade will be an increase, and not a decrease, of the National Dividend." "In addition to this there are the dangers in Protection, first, of corrupting the political life of a country; second, of provoking the animosity of other nations." As to the general depression after the War Von Koch says: "It can safely be said that the present business depression does *not* result from Free Trade. On the contrary it results—besides from monetary conditions—to a great extent from political conditions that have prevented proper Free Trade between nations." The study closes with a quotation from Professor Cassel on the indemnity question in which he says: "The

consequence has been a general growth of protectionism, and, notwithstanding all that was said at the International Financial Conference at Brussels in favour of Free Trade and free intercourse between nations, the world is unmistakably moving in the opposite direction. This result of the indemnity is most unfortunate and injurious, and is perhaps the most important hindrance to the economic recovery of the world which, even from the Allied countries, is of much greater interest than any indemnity." Von Koch's paper is a timely and thought-provoking contribution to an old problem which the world war has made new again.

In Days to Come.

By Walther Rathenau. Published by George Allen & Unwin Limited, London. 12s. 6d. net.

We rise from the study of this truly remarkable book with the sincere satisfaction that we have spent our time well on it. It is a book full of thought—criticizing the present and looking beyond it. It is the work of one who is at once a deep thinker and a great man of action. Walther Rathenau is well known as the life and soul of the German A. E. G., the premier electrical undertaking in Germany. Yet in this book he appears essentially in the role of a thinker. There are passages in this book which could be quoted to show the versatility of this great writer. It is impossible to withhold admiration from a man so impressively great. The book attacks vigorously what he terms "official socialism," yet he bears witness to the good aspects of it and for their assimilation in his own Utopia. Concluding one part of his work he writes:—"The goal towards which we strive is the goal of human freedom." The chapter which is headed "The Way of Economics" is of special interest to us. The contrast between the present and the future as he would have it is depicted in this chapter in a manner that is certainly charming. The conclusions are succinctly stated at the end for the sake of clearness. Here are some stirring words:—

"We are learning how to see. Not for the sake of a subsistence wage, not for the Devil's happiness of mere enjoyment and vanity, not for the sake of sloth, selfishness, and freedom from responsibility shall we barter away the dignity of our manhood and the life of our soul. We are striving for the unity and solidarity of the human commonwealth, for the unity of spiritual responsibility and divine confidence. Woe to the race and to its future should it remain deaf to the voice of conscience; should it still be petrified in materialistic apathy; should it rest content with tinsel; should it submit to the bondage of selfishness and hate.

We are not here for the sake of possessions, nor for the sake of power, nor for the sake of happiness; we are here that we may elucidate the divine elements in the human spirit."

A book of unsurpassing interest, worthy of close study, if for nothing else at least for knowing how the best German minds are now working.

The Founders of Political Economy.

By Jan St. Lewinski, D. Ec. Sc., Professor of Political Economy in the University of Lublin, Poland. Published by Messrs. P. S. King & Son, Ltd., Orchard House, Westminster, London, S.W. Price 6s. 6d.

Professor Lewinski deserves to be warmly complimented on the production of this suggestive study of the first founders of Political Economy. Those who are acquainted with Ingram's well-known *History of Political Economy* and the equally famous book of Professor Cannon will see the difference between them and this book. This is more limited in scope but is deeply critical and constructive. It traces the origins of Economic ideas and their development during a hundred years of thought. Take, for instance, his criticism of the Physiocratic system. Concluding a closely reasoned examination of the same, he says that "it resembles those early drawings of the human body which can be found in old medical books. Only some organs are represented there, others being quite neglected. The ground rent dominates the whole process of distribution in which there is no place for interest or wages. Nevertheless, we are much indebted to the Physiocrats for having separated

Political Economy from other Sciences and for having tried to embrace for the first time in one system the whole economic process of production, distribution, and exchange." Of Adam Smith, he writes that "he created its (Political Economy's) method, laid the foundations of the theory of distribution." He also traces to Adam Smith the beginning of the theory of division of labour and the law of supply and demand. To Ricardo, he gives much space. His examination of Ricardo should be studied in full to appreciate its value. He points out the weakest points of his reasoning. He writes thus in one place:—"Ricardo's theory of distribution is the most genial attempt hitherto undertaken to investigate the influence of a rise of rent on wages and profits. But it is only an attempt and not a final solution." Of the post-Ricardian matters, Prof. Lewinski says that they are more systematisers of the inheritance left to them by the founders of Political Economy than original contributors to its development. Altogether Prof. Lewinski has produced a work which for its brevity or its deep suggestiveness is hard to beat. It is a book that ought to be on the shelf of every serious student of Economics.

India and Germany.

No feature of the Indian trade returns of the last year or two has been of greater interest than the progress made toward restoration of German commerce with this country.

The advance was slow for sometime after the Armistice. In the year 1919-20 India sent goods to Germany to the value of Rs. 139 lakhs, receiving shipments therefrom on only Rs. 4 lakhs. In the following year the corresponding figures were Rs. 882 lakhs and Rs. 475 lakhs. These figures represent about one-third of those of the pre-war year 1913-14, when the exports from India were Rs. 2,642 lakhs and the imports Rs. 1,257 lakhs. The percentage share of Germany in the total trade of India was 9.05 in the pre-war year and 2.3 in the last fiscal year.

Further progress has been made in this fiscal year, which has still three months to run. In its first half both the imports and the exports were more than double the value of those of the same period of 1920. At the same rate of progress for the second half of the year Germany will have reached the position of recovering, in terms of rupee value, nearly half the pre-war trade.

The progress of German trade in the present year can be seen at a glance, so far as values are concerned in the following table in lakhs of rupees:—

	March to September.		
	1913	1920	1921
	Rs. lakhs	Rs. lakhs	Rs. lakhs
Imports from			
Germany	590	139	281
Exports to Germany	1,141	327	668

REVIVAL OF DYE TRADE.

In view, however, of rising prices and fluctuating exchange, the best test of progress is expressible in quantities. Particular interest attaches to the German imports of alizarine and aniline dyes, which in the pre-war year were shipped to India to the extent of over 12,000,000 lb. In 1919-20 the quantity was 90,400 lb., while in the last complete year it rose to 3,653,000 lb. The advance in the six months ending September last was less rapid, and at the same ratio

the shipments for the year will not reach 4,000,000 lb., or one-third of the pre-war figure. Iron and steel figure next on the list with an import of 15,000 tons, compared with 200,000 in 1913-14. In the six months to September there was an import of 5,100 tons of steel bars and 3,500 tons of iron or steel sheets and plates not galvanized or tinned.

In 1920-21 India received 415,000 yards of German goods of silk mixed with other materials, as compared with nearly 2,000,000 yards in the pre-war year. A notable feature was the good beginning made in restoring the trade in German beer, ale, and porter. There had been no imports in the previous year, but in 1920-21 over 113,000 gallons were received. In the six months to September last the quantity was 132,000 gallons. At such a rate of progress it will not take long to get back to the pre-war figure of over 600,000 gallons per annum. Germany is now making a bid for the trade in printing paper. She shipped in the last fiscal year nearly 14,000 cwt., as compared with 93,000 in the pre-war year.

She is also resuming to competition in the coloured cotton piece-goods market. In the first half of the present year she shipped some 45,000 yards, as compared with the 3,000,000 yards of pre-war days. A notable feature is the restoration of the salt trade. The 19,600 tons of the April-September period are more than half the pre-war figures.

EXPORT OF HIDES AND SKINS.

The most interesting feature of the tables on the export side, particularly having regard to the elimination of German and pro-German handling of the war, is the revival of shipments of raw hides and skins to Germany. It began very gradually, and in 1919-20 the quantity shipped was only 60 tons. It was not until near the end of the following year that any substantial trade was recorded, the total for the year being 3,700 tons. But in the first half of the present trade year no less than 6,000 tons were shipped. If this rate of progress is maintained up to March 31 Germany will have recovered three-fifths of the shipments of 1913-14. The revival of this trade is the more noteworthy since the last

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Mysore Economic Conference.*

By A. R. Banerjea, M.A., I.C.S., C.S.I., C.I.E.

Dewan of Mysore State.

I esteem it a privilege to welcome you to the Thirteenth Session of the Mysore Economic Conference, to review, as usual, the work done by the Government and the people for economic improvement in the State during the past year, and to exchange ideas as regards our hopes and anticipations for the future. The work done by the several agencies of the Conference, *viz.*, the Central Boards, the Board of Scientific Advice and the District Boards, has been incorporated in brief printed reports which have been placed in your hands. I shall not, therefore, dwell in much detail on what has been accomplished: a brief reference to the salient activities is all that is necessary.

WORK OF THE CENTRAL BOARDS.

2. The Boards of Education, Agriculture, and Industries and Commerce, met only four times during the year in accordance with the revised orders as against six meetings which they had in the preceding year. The reduced number of meetings has, as might be expected, affected the number of subjects which could receive attention during the year and the Boards of Education and Agriculture could not, on that account, carry out in full the programme of work that had been approved at the last Session of the Conference. Nevertheless, the most important items on the programme received full consideration and recommendations were submitted by the Boards for the approval of Government. The Board of Industries and Commerce was able to attend to nearly all the items included in its programme.

3. Among the subjects dealt with by the Board of Education, the most important were the establishment of a Central Publication Bureau for bringing out scientific text-books in Kannada, proposals for improvement in the administration of backward community scholarships, introduction of the system of term promotions in Primary and Secondary schools, the institution of endowments for the maintenance of Village Elementary aided schools, education of factory children and of men in the Mysore Army, the revision of curricula of Kannada Primary Boys' and Girls' schools, simplification of the procedure for the payment of local contributions for educational buildings, etc. You are aware that, to carry out the programme of educational reforms, it is necessary to find additional funds and till now, the scheme of financing the reforms has not succeeded owing to the failure of the District Boards to contribute any part of the revenues assigned to them for the purpose in 1916-17. It is therefore essential that every kind of private and voluntary effort in the cause of education should be enlisted. As an integral part of the scheme of educational expansion of recent years a large number of aided Village Elementary schools were established, the pay of the teacher being met partly by Government as a grant-in-aid and partly by the villagers themselves. Experience has proved that the contribution from the villagers is an uncertain factor and could not be depended upon, with the result that many of the schools which were started at the request of the villagers themselves have since been either closed, or are in a languishing condition. The question received the careful consideration

* Address delivered at the opening of the Birthday Session of the Conference, 6th June 1922.

of Government when they passed orders on the Education Memorandum. You know it has been decided that, as far as possible, these schools should be converted into Government schools at the rate of 250 every year. But as, in view of the changed financial conditions, progress hereafter must necessarily be slow, it may not perhaps be unwise to try to quicken into life some of these aided institutions where the people of the village might be earnest and really enthusiastic. The question having been considered by the Education Board they have recommended that, in order to remove the uncertainty involved in the villagers' contribution towards the pay of the teacher, the villagers might be encouraged to make an endowment of about a thousand rupees or so in the course of two or three years which may be funded and the interest thereon utilized for the part payment of the teachers' salary. Such schools may also receive preferential treatment in regard to conversion into Government institutions, the total fund in that case being taken as a contribution towards the school building in the village. It seems to me, Gentlemen, that the proposal is a sound one and is calculated to introduce some amount of stability into the scheme and will supplement the efforts of Government in placing the large number of Primary schools on a proper basis.

4. In fact, the State, in undertaking the responsibility of providing for Primary education, can do so only as a trustee for the local bodies, so long as the latter are not ready. Whether the funds are provided out of the general revenues, or by local educational rates or cesses levied and collected by local bodies, the management must more and more largely devolve on the local bodies themselves; for, self-education for the masses, as for the individual, is the best part of education, and local variations and experiments, which are the outcome of local needs and resources, can alone give meaning and usefulness to any scheme of compulsory universal education. A compulsory scheme of a more or less 'abstract' education, out of touch with the concrete requirements of the people and not rooted in the soil, would indeed make the people less efficient and more helpless in the struggle for life. Accordingly, the State must do nothing to impair the sense of responsibility in the local groups and communities themselves. It is hoped that the Education Board will keep these questions in view in the coming year and concentrate their attention on solving

the difficulties which the Government have now to face.

5. Among the many subjects dealt with by the Board of Agriculture might be mentioned the development of horticulture, the administration of *takavi* loans by the Agricultural Department, the development of commercial crops, improvement of live stock, formation of mulberry plantations, establishment of a silk league for pushing on the sale of Mysore silk by the standardization of prices and qualities, and the levy of an *ad valorem* duty on reelable cocoons exported outside the State. The last proposal, which is a very important one, will come up again for discussion as a separate proposition before this Conference. The object of the proposal is to encourage and promote the manufacture, locally, of at least a portion of the raw silk produced in the State. The question is not free from difficulty but I trust that with your help and valuable suggestions we may be able to arrive at a satisfactory solution.

6. The most important subjects dealt with by the Board of Industries and Commerce were the consideration of measures for the establishment of a sugar factory, paper pulp manufactory, examination of the policy regarding the development of mineral resources, utilization of forest economic products for industrial purposes, question of providing facilities for the acquisition of land, supply of water and electrical energy for industrial undertakings, and industrial and trade finance by Government through banking agencies.

7. Owing to the extraordinary rise in the price of sugar sometime ago, the question of establishing a sugar factory in the State received thorough and careful attention from all standpoints. Even before the publication of the report of the Indian Sugar Committee, His Highness' Government promised special facilities in the shape of grant of lands, etc., to private capitalists or joint-stock concerns who were willing to start a sugar factory on a reasonably large scale but the response was not encouraging. An investigation was made as to the availability of suitable irrigable land in large blocks for growing sugarcane, with special reference to the lands below the Sulekere lake and the Vani Vilas Sagara. After a thorough enquiry the Board have recommended that a list of lands which might be regarded as suitable for growing sugarcane on a large scale might be prepared and published for general information together with an account of the facilities regarding land tenure, water rate,

etc., which the Government might be willing to give to intending capitalists prepared to start a factory. The question is yet before Government. But judging from present indications, as well as from the recent fall in the price of sugar and jaggery, it seems doubtful whether any practical scheme will soon materialize. The policy to be followed in regard to the development of mineral industries received consideration at the hands of the Board. About two years ago, Government passed orders that certain areas known to contain valuable mineral deposits should be reserved against immediate exploitation as it was thought that the Department of Industries and Commerce might carry on experiments, and eventually exploit them on behalf of Government. The Board felt that this policy of reservation did not promote private enterprise but hampered the development of mineral industries and a recommendation has accordingly been submitted to Government that the reservation might be removed. The question is now under the consideration of Government. The improvement in the cultivation and refining of lac, a valuable product of our forests, also received the attention of the Board of Industries and Commerce and the Board of Scientific Advice. The question of encouraging the formation of joint-stock companies for industrial and trade purposes were examined by the Board and their recommendations have recently been approved by Government.

WORK OF THE DISTRICT BOARDS.

8. As regards economic work in the districts, it is within the recollection of the members of this Conference that my distinguished predecessor, Sir M. Kantaraj Urs, in his Address to this Conference last year, referred, with a feeling of disappointment, to the work done by our agencies in the districts. I regret I have to repeat the same sense of disappointment as I do not see any material improvement. I am aware various causes have contributed to this result. In order that the District Boards, which, by statute are expected to attend to the economic needs of the districts, might carry out this duty satisfactorily, the administration of the Government grant of over Rs. 3,000 per annum was left entirely to their discretion. Nevertheless the work does not seem to have received much attention. This question was therefore considered at more than one meeting of the Central Economic Development Board and as a result of lengthy discussions a resolution was adopted

appointing a strong sub-committee consisting of representatives of District and Central Boards to re-examine with care and in sufficient detail the Conference Organization as a whole, and report what changes were needed to make each part of the constitution perform its function more effectively. The recommendations of that Committee, which was presided over by Rajasabhabhushana Dewan Bahadur K. P. Puttanna Chetty, C.I.E., has just been received and copies are now in your hands. It will be noticed that no important or radical changes in the constitution have been recommended by the Committee. It is, therefore, clear that if economic work in the districts is not as satisfactory as it might be, the causes, perhaps, lie elsewhere than in defective organization. However, I shall not dwell longer on this subject as the question will come up for discussion at this session of the Conference.

WORK OF THE DEVELOPMENT DEPARTMENTS.

9. Gentlemen, you will perhaps also expect to be informed at this Conference how the development departments in the State worked during the year. In the sphere of education, the Department was engaged in the preliminary work of giving effect to the instructions contained in the Government Order on the Education Memorandum. This is a huge task but it must be accomplished however slowly and whatever difficulties we may be faced with, if the question of mass education should receive a satisfactory solution. Government and the Department are giving considerable attention and concentrating all their available resources for carrying out the objects in view.

10. The Department of Agriculture has been devoting, as usual, special attention to increase the agricultural output of the country. Valuable experiments were made during the year in the utilization of new manures, improved methods of cultivation, improved seed supply, the prevention of fungoid pests and other matters. The improvement of live-stock and the development of the valuable industry of sericulture also received due attention. The most important feature in sericultural work has been the establishment of a filature in Mysore for reeling silk. As you are aware, though Mysore produces a large quantity of silk every year, valued at nearly 40 lakhs of rupees, the bulk of it is exported in a raw condition for manufacture outside the country. As the result of a long and careful investigation which included tests with

Mysore cocoons in the leading filatures of Europe and India, and the first-hand study of reeling organizations, a filature with a unit of 12 basins is now under erection in the Exhibition Buildings in the capital city. It is a modest venture but if it succeeds, as we all hope it may, it may prove to be the pioneer of a most prosperous industry in the State.

In a memorandum before me, the Director of Agriculture has estimated the increase in agricultural wealth due to the operations of the department in tens of lakhs every year. Even assuming that the estimate can only be very rough, I have no doubt you will agree that the activities of the Department have been instrumental in adding very substantially to the income of the ryot from agriculture which is the staple industry of the State.

11. The Department of Industries and Commerce was engaged in granting loans for industrial purposes and for the purchase of machinery, in pioneering new industries, in carrying on demonstrations and experimental work, in giving free technical advice, wherever possible, to traders and industrialists, and generally in stimulating, by propaganda and other means, private enterprise for industrial work. Owing to the financial stringency, the grant of takkavi loans had unfortunately to be limited to about Rs. 40,000 against the budgetted grant of Rs. 75,000. A large number of applications had been received which is evidence of the growing desire of the people to take more and more to industrial occupations, but unfortunately many of them had to be rejected.

As you are aware, the department have started and have been managing for some years certain industrial undertakings. These are the Industrial Workshop, the Art Workshop, the Weaving Factory, the Metal Factory, and the Soap Factory. Some of these were started partly as demonstration, and partly as experimental, concerns. At the commencement, owing to unskilled and untrained agency, mistakes were committed and all of them could not be worked with the same measure of success. Profiting by the lessons of the past, Government have been overhauling and re-examining each of these concerns. The Central Industrial Workshop, which has been over-weighted with certain items of heavy capital expenditure, will be re-organized and run hereafter on a strictly commercial basis. It will be employed mainly in executing repairs and renewals for Government Departments, in the manufacture of simple

machinery for agricultural purposes and in attending to private repair work if time and resources permit. The Art Workshop, which is partly educative in character, is capable of being worked so as to yield a profit. Improvements are also needed in the methods of manufacture as well as in the marketing of goods produced in the Weaving Factory. This question is receiving the special attention of the Director of Industries and Commerce. The Metal Factory, which was started as a pioneer concern, has been transferred to an influential local syndicate and the Soap Factory, which may be pronounced to be an unqualified success, will also be transferred to private agency after Government are satisfied that a proper company will be established locally on a satisfactory basis to run the concern. The produce of our factory, *viz.*, the Mysore Soap, has already acquired great popularity in the Indian markets and the department deserves congratulation for having made a success of this enterprise.

12. As a result of the earlier activities of the Department of Industries and Commerce, a number of power installations for industrial purposes were established throughout the State but complaints have been received frequently that some of them, particularly the pumping installations had occasioned loss to the owners. Here, again, it must be confessed that in the earlier years, when the work was new and the officers of the department had themselves not acquired sufficient experience, it is possible that mistakes were made in the selection of machinery, in not choosing the proper locality, or the proper kind of persons to run the concerns. As promised by my predecessor at the last Session of the Conference, a detailed investigation as to the condition of each of these installations was carried out by the Director of Industries and Commerce and from a report sent by him, it is found that out of 197 concerns now in existence, 184 have received financial assistance from Government in some form or other. They consist of 31 pumping installations, 27 rice mills, 5 oil mills, 14 flour mills, 4 tile factories and 103 other enterprises.

In all the 184 installations for which loans have been granted by Government, more than 50 per cent. are worked with profit and in 35 per cent. more the results would be better if the management were more efficient and the concerns had more working capital. The concerns which do not yield profit or have been shut down are reported to be about 25.

Of the pumping installations 19 are actually working at present, 6 have completely stopped work due either to increase in the cost of liquid fuel or disputes among the partners. The others are only used occasionally as a stand by on occasions of drought. Actual experience has shown that, for irrigating an acre with the aid of such installations, the cost amounts to about Rs. 80 and that it is not desirable to start such installations unless the owners are able to irrigate at least 10 acres of good land and raise commercial crops.

The majority of the rice mills are working satisfactorily and 14 of these are reported to be yielding good profit. With regard to those that have not worked well, failure in the case of two installations is due to differences among partners. Three installations have been erected at places which do not happen to be centres of trade, two concerns have no efficient management and three others could not get adequate working capital.

The oil mills are yielding good results owing probably to the fact that the persons who started the concerns have shown greater business capacity.

13. In this connection it is pleasing to note that the use of electricity for industrial purposes in the cities of Bangalore and Mysore has been steadily on the increase. The number of such private installations in the year 1918 was 80 in Bangalore and 32 in Mysore; but in 1920-21 they have increased to 116 and 52 respectively. The quantity of horse power utilized in these concerns excluding, of course, the Gold Mines, has increased from 3,111 to 3,647. We have good grounds for hoping that the availability of cheap electric power in our capital cities will soon lead to a rapid multiplication of small industries.

14. Turning now to instances of large private enterprises within the State, some noticeable developments have taken place during the year. My predecessor referred, at the last Session, to the establishment of the Sri Krishnarajendra Mills at Mysore and the factory for the manufacture of essential oils by an influential local syndicate. Since then, it is announced that two more spinning and weaving mills will be established in Bangalore, *viz.*, the Minerva Mills with a capital outlay of Rs. 30 lakhs and the Mahalakshmi Woollen and Silk Mills with a nominal capital of Rs. 20 lakhs. Work is proceeding for the establishment of both these concerns. The Mysore Pioneer Industrials have started a woollen mill near Hebbal, having secured an

expert from England, and the erection of the machinery is stated to be complete. A former officer of the State Geological Department has been responsible for the floating of a concern known as the Mysore Clay Works for the manufacture of table-mould and fire bricks. A good deal of interest has been exhibited by various capitalists in the exploitation of kaolin deposits. Government having advertised certain concessions in this matter, a local capitalist availed himself of the offer and has arranged to start a porcelain factory near Bangalore. Government have under contemplation the throwing open of the Oblapur lime-stone deposits in the Tumkur District to private enterprise for the development of an industry in lime products.

The Mysore Paint Works which was given certain concessions by Government in the year 1920 has been registered as a joint-stock company and arrangements are being made to start operations but the response to the appeal for capital is stated to be small.

PRESENT OUTLOOK.

15. So much, Gentlemen, for the work done by the departmental agencies and private capitalists. You are aware that during the past year we have passed and are yet passing through very difficult times. An extraordinary slump in trade all the world over, the contraction of credit, the disorganized state of the exchanges, the disputes between capital and labour, and other causes have brought about a terrible reaction after a short boom on the close of the Great War. The prices of necessities yet rule very high and the resources of Government are seriously affected by the increased cost of supplies and services. In this state of things, you would not, I know, expect His Highness' Government to spend as largely on economic work as they were able to do in the past. The need of restricting expenditure on the services to the lowest possible minimum has necessitated a re-organization of the Department of Industries and Commerce on the basis of a smaller grant. This question is now under the consideration of Government, but, though the grants will be reduced, I may assure you that the main lines of activity will be maintained. Similarly, the budget of the Economic Conference organisation will have to be revised. We cannot afford expenditure on all those items of propaganda and investigation which we were used to in the past. With a reduced establishment, we must be prepared to go slow. But this only means, that economic work will hereafter

have to be attended to more and more by the people themselves and less and less by Government. This was indeed the ultimate idea of the promoters of this Conference. This means also that the responsibilities devolving on the members of this Conference for the improvement of the economic condition of the people will be greater than before. We need not be disheartened by the unfavourable symptoms in trade and industry; they cannot last for ever. On the other hand, for that very reason we should put forth special efforts in directions in which immediate results can be obtained. For example, there is a great future for the weaving industry. The Director of Industries and Commerce is now engaged in investigating the possibilities of introducing power looms for weaving silks and cotton fabrics in the cities of Bangalore and Mysore where electric energy is available. I understand that the experiments are extremely promising and if private enterprise could be enlisted on an adequate scale, the total production of the State can be greatly increased.

Besides power looms in the cities there is great scope for the expansion of the weaving industry in the interior of the State. Certain improved appliances introduced by the Government Weaving Factory have attracted some attention and obtained the first prize in the All-India Exhibition held at Patna recently. I mention the instance of the factory to show what scope there is for private enterprise and propaganda work by non-official gentlemen.

The other cottage and rural industries also require attention. According to the Industrial Census held in connection with the last decennial Census, the important rural industries prevalent in the State, besides hand-loom weaving, are sericulture, manufacture of bricks and tiles, carpentry and sawing timber, manufacture of carts and agricultural implements, manufacture of metal ware, mat and basket making, rattan work, rope making, pottery, oil pressing, and tannery and leather work.

Government are placing a small grant at the disposal of the Director for experimental work during the year on these industries, but this cannot go very far and for some time to come, the responsibility for the development of this branch of work must rest with the people themselves. The District Boards, particularly, should in the coming year pay special attention to these matters.

FUTURE WORK AND PROGRAMME.

16. I will conclude this resume of our

proceedings with a few general observations bearing on our present situation. An extensive survey of the economic field with general pioneering work has been our aim in the first decade of our existence. But this "extensive" development, with the equally extensive propaganda work which we have hitherto pursued, must now be followed by a plan of "intensive" development, directed to the production of definite results in restricted fields which we must single out for our concentrated efforts. That was the principle which, as Chairman of the Industries and Commerce Committee, I urged in my speech at the eighth (1917) session of this Conference. This is, indeed, the natural course of development, which even a Development Board cannot transgress, and which our financial position indicates to us as the wisest and most practicable. In agriculture, industries and commerce alike, we must now limit the field of our operation, plan the whole campaign deliberately, and seek to obtain our objective in a definite period of time and by definite successive steps. But not only must we define the objectives, we must choose the lines of advance. In other words, we must be guided in our operations by certain definite principles and methods adapted to our economic position and resources, and to the problems we choose to take in hand.

Let me illustrate this statement from the field of industrial development. Our chief objective latterly has been the investigation of large schemes, the starting of mills and factories employing steam or electricity, and worked with comparatively large capital. But the development of these industries no longer stands in need of the initiative or enterprise of the Economic Board or the Department of Industries and Commerce, though no doubt the Board of Scientific Advice can yet do much to contribute to the success of these undertakings. But we are just in the stage of economic development which is best adapted to the growth of smaller scientific industries. Such industries have three characteristic features:—(1) they are generally managed with comparatively small capital, (2) they are often in the nature of subsidiary industries and (3) they do not require high class or costly machinery. Many of these are chemical industries, implying some knowledge of applied chemistry or chemical technology and, in many cases, they turn to the utilization of waste products. No doubt the want of cheap fuel in this part of India is a drawback and tells to some extent against a number of chemical

industries, but the same geological and physiological agencies which have stunted us in coal have provided us with water power which we have known how to harness in the service of the larger industries, and the difficulties arising from want of coal in the case of some of these chemical industries have been solved elsewhere, *e.g.*, in deltaic Bengal, and are not insoluble in the table-land of Mysore. The Development Boards cannot do better than attempt to develop such industries. An up-to-date industrial survey of Mysore economic products (including bye-products and waste products of industry) is the first requisite, and the Board of Scientific Advice can then chalk out the lines of advance. It is interesting to note that Japan's economic progress at the outset depended, and still to a great extent depends, on these middle grade industries which stand midway between the old handicrafts and the new large-scale and high class scientific industries. In India, our economic resources in cheap untrained labour and abundant raw products, with our comparative dearth of capital and our comparative backwardness in joint-stock enterprise, exactly fit us for this intermediate stage between an agricultural and a highly developed industrial economy.

17. Another direction in which we must move, and that without delay, is the fostering of home or cottage industries, especially for the families of the cultivating classes in rural tracts. We must never forget the fundamental economic distinction between the two classes of cottage industries—*viz.*, those which employ *surplus labour*, of man, woman or child, in the home of a peasant family in the idle season, for example, and those which are regular crafts pursued as principal means of livelihood. The Department of Industries could no doubt improve this latter class of crafts, partly by the introduction of hand machines and improved tools where possible, and partly by arranging for sales and markets, but this work is of a limited scope and cannot succeed without the co-operative efforts of the people themselves, stimulated, it may be, by the propaganda work of our Economic Conference. But much more than this is necessary for the other class of home industries, those based on surplus labour. These have to be carefully organized. And no greater source of prosperity or greater access of staying power could be brought to our villagers in the interior, who form the backbone of the population, than if the Development Board were in the

course, say, of the next 5 years, to establish, in select localities, suitable home industries engaging the surplus labour in each family for the production of some of the necessities of life, primarily for domestic consumption and only secondarily, if at all, for sale. Articles of food, clothing and personal cleanliness, accessories of household utensils, furniture and hut building on an improved standard of living, and, as far as possible simple tools and simple repairs, are among the necessities of life with which each rural household should supply itself by means of its own surplus labour, a reserve which indeed is neither scanty nor intractable for the rural population in India;—and the Board as well as the Department of Industries should be able to carry such a scheme through in certain select areas with the help of voluntary agencies, especially those in the nature of co-operative and social organizations. We must of course avoid the mistakes of the past in regard to our activities for the development of home industries in certain selected centres, *e.g.*, Bangalore and Mysore, which created so much controversy at the eighth annual session of this Conference.

18. Turning to Agriculture, the intensive method is now a special feature of the development work done by our Agricultural Department and whatever success our model and experimental farms have recently attained in India after a long and arduous struggle, have been attained by keeping steadily in view some particular improvement—an improved seed here, or a new manure there. All that remains to be noted under this head is that the propaganda work among the rural classes for standardizing or fixing the results achieved in the Department, should also be intensively pursued, instead of being dissipated over too wide a field or in the production and dissemination of bulletins on sundry topics.

19. I will now turn to development work in relation to commerce. The governing fact in this field is that the profits of the middle man arising from transport or the carrying trade are often greater than those of the producer or manufacturer, and may sometimes amount to 50 per cent or more of the entire profits accruing from the trade in any particular crop or commodity. Accordingly, the total volume of profits accruing from India's commerce with the world in the raw materials that form her staple produce is not of less value than the wealth that might be created by the establishment of scores of new industries or manufactures in the country.

The tapping of this perennial and inexhaustible source is the real meaning and measure of commercial development. The business instinct which can successfully accomplish this task must be acquired by early familiarity with the operations of the market. That is the school for graduation in Commerce. It is only by choosing men of the requisite temperament, caninness, the eye for a deal, or for the capabilities of a commercial situation, the rapid calculation of risks, the blend of courage and caution, which characterise the successful man of business,—it is only by choosing and training men of this type and not the accountant or statistician, the student of business methods or commercial law, of revenue or banking systems, that we can succeed in turning out a race of commercial agents and correspondents competent to open up new channels of trade or commerce between two peoples or countries. And the only training which counts in the case is that which results from cumulative experience, especially the training which one imbibes in the plastic years of youth, from the atmosphere of the markets and exchanges themselves.

Youths of this temperament and training must be equipped with the knowledge of languages, of economic products and of business methods and sent abroad to open up new channels of trade, new exchanges of commodities with distant countries in the Old World as well as the New. The costly paraphernalia of Commerce Schools and Colleges or of a Department of Commerce, will no longer be a luxury when we have succeeded in building

up foreign commerce with the help of these trained commercial agents and correspondents abroad. The training of such agents and correspondents for foreign commerce and the organization of a wide network, in fact, of a system of commercial service in the markets of the wide world must now be the goal and objective of our Economic Board in the Commerce section, so that a lucrative opening may be found for enterprising youths of Mysore and the State may also thus establish a channel of trade and commerce with foreign countries and markets thereby gradually ousting the middleman altogether who has no stake in the country and makes all the profits.

20. Gentlemen, I have detained you long with the account of our work and a few suggestions for our future plans. The times are out of joint and this Conference is really now on its trial as the days of its adolescence are passed and it is entering on the period of strong youthfulness. Let it not be said that the constitution of the Conference is weak and that it is going to lead in the future an easy, indolent and useless existence. Government will gradually have to withdraw from the field of their previous work and the responsibility of the people to enter in large numbers there is now apparent; and by their industry they should reap a rich harvest. I have no doubt in my own mind that this responsibility the leaders amongst His Highness' subjects will in coming years most worthily discharge.

I now declare the Thirteenth Session of the Mysore Economic Conference open.

Canadian Hydro-Electric Progress.

According to a review of hydro-electric progress in Canada during 1921, prepared by the Dominion Water Power Branch of the Department of the Interior, there has been added to the installed capacity of water-power plants practically 300,000 h.p. The new installation in the individual provinces has been approximately:—Nova Scotia, 13,000; New Brunswick, 9,000; Quebec, 90,000; Ontario, 174,000; and Manitoba, 14,000.

The Power Commissions of Nova Scotia and New Brunswick have successfully carried out the first provincial developments, and are practically ready to deliver electrical energy to the principal cities.

In Ontario the Queenston-Chippawa plant of the Hydro-Electric Power Commission of Ontario has been placed in operation with two 60,000 h.p. units installed.

In Manitoba the Manitoba Power Commission has extended its activities, and the Manitoba Power Company has under active construction an important development at Great Falls, on the Winnipeg river, with an ultimate capacity of 168,000 h.p.

The developed water power in Canada now totals 2,756,000 h.p., with considerable activity in the way of new extensions, new construction, and projects.

Labour and Welfare Work in India.*

By Mr. A. C. Chatterjee, I.C.S.,

Secretary to the Government of India, Department of Industries.

I wish to thank you for the very great honour that you have done me to-day and I wish to thank you Mr. Joshi for the very kindly language in which you have referred to me. I consider it a very proud privilege to be associated with you on the present occasion. I am fully aware that you have chosen me as your President not for personal qualifications but because of my official connection with the problems of industry and labour in our country. I see many gathered here who have much greater right to occupy this chair, either on account of a far more intimate acquaintance in actual practice with the problems to which we shall presently address ourselves or by reason of their devoted and selfless endeavours for the amelioration of the conditions of labour. I take it therefore that your choice of me as President has been prompted by a desire to recognize the interest which the Central Government and the various Provincial Governments are taking in the welfare of labour—I am referring not only to the Executive Government but also to the various Legislatures. One clear indication of that interest is to be found in the presence here to-day of a large number of representative Government officials whose work brings them in contact with those problems. Indeed, it seems to me a very happy augury that in this Conference there should be associated together in common purpose and endeavour men and women whom I may describe as representative of capital, labour and the State. No welfare work for industrial labour is possible without the direct sanction and generous assistance of employers, nor can any welfare work attain its purpose unless it secures not merely the passive acquiescence but the active co-operation of labour itself. The State must also participate not only by legislation but also by executive action, inspection and the enforcement of laws and regulations.

Welfare work has been variously defined. One definition confines it merely to the provision by the employer for the worker of the best conditions of employment. A definition more generally accepted includes within the

scope of welfare work all efforts which have for their object the improvement of the health, safety and general well-being as well as the industrial efficiency of the worker. Which-ever definition is accepted, the interest of the State or of the general community in the work is manifest. Taking the narrower and purely utilitarian view, it will be evident that industrial progress or even the maintenance of our existing industrial condition is impossible without securing the efficiency of our labour. I think we are all agreed that if India is to take her proper place in the world or if we are to secure prosperity and contentment inside the country, we must utilize to the utmost our vast natural resources and develop our industries. I have given much thought to the matter, and I am convinced that unless we raise very considerably the present low level of efficiency of our labour force, the mere provision of capital or the training of superior management will not enable us to hold our own in competition with the rest of the world. It is useless now to attempt to keep India like an isolated island cut off from the rest of the world. It is impossible to prevent other countries from competing with us. The natural resources of the United States are probably more varied and more extensive than ours. The faculties of the *entre preneur* are much more highly developed in America than is the case here. With all these advantages and with a high tariff wall America has not been content to let her labour remain ignorant or inefficient. On the other hand, as we all know, the American employer devotes much time and thought to promote the efficiency of his labour force. Indeed, in that country the employer who pays the highest wages is usually considered the most successful, because it is known that he would not pay the wages he does without securing corresponding efficiency. The importance of welfare work is, therefore, clear from the narrowest utilitarian point of view. But I do not want to stress unduly this aspect of the question; I know that many of the delegates who have assembled here, are devoting their unselfish labours to the cause of the industrial worker not merely in order to raise his efficiency as a working unit but in order to improve his position as a citizen of the country and as a human being. Even

*Presidential Address delivered before the All-India Welfare Conference, 1922.

if we look to the merely political aspect of the question, it is important that the industrial worker who is going to form an important element among the governing classes of the country should be provided with ample facilities for his physical and mental well-being.

In India the need of welfare work among industrial workers is perhaps much more marked than it is in western countries. One notable feature of our industrial organization is that the workers in our industries, at least at the present moment, are practically all recruited from the rank of agriculture. They travel long distances, in many cases hundreds of miles, to regions where a different language, a different climate and an entirely different environment confront them in addition to the strangeness of unfamiliar, continuous and sometimes dangerous work in enclosed buildings and areas. The workers arrive young and inexperienced, far from their own families and friends, and it does not require much imagination to realize how difficult and trying their position is. Any help extended to them in these circumstances cannot fail to be rewarded with fruitful results.

This migratory character of Indian labour is responsible for another factor which is largely contributory to its present low standard of efficiency. In the strange and unfamiliar surroundings in which the labourer finds himself, even slight discomforts and inconveniences often prove galling and irksome, and the labourer is to be found constantly throwing up one job after another and in many cases he returns home much more quickly than he himself originally wanted to return. The result is an appallingly large labour turnover in practically all our mills and factories. The economic loss caused by this wastage is almost beyond estimate. I know most enlightened employers have given attention to this problem, but I feel that it cannot be solved without active co-operation on the part of employers as well as of labour, and without an extensive organisation for welfare work. I shall not dilate on this question, as I am sure that it will be raised again in the course of our discussions during the sittings of the Conference.

There is another fact which forces itself on the attention of anybody who examines at all carefully the industrial conditions of the country. I refer to the wastage that occurs among our children, or in other words, among our prospective workers. The mortality among infants in our industrial towns is almost heart-

breaking. One is almost inclined to rejoice, in spite of the evils attendant on the separation of the husband from his wife and children, that only a comparatively small proportion of our manual workers are able to keep their families with them in these towns. Looking at the problem again from a purely utilitarian point of view, it is clear that this heavy mortality among children entails losses to the country of large numbers who might otherwise have developed into efficient workers with considerable skill acquired through heredity or environment.

I have tried to indicate very briefly how welfare work among our industrial population is justified, and is, indeed, absolutely necessary from the point of view of narrow utility as well as on higher patriotic and spiritual considerations. It is not my province, to go into detail regarding the many aspects in which this problem has to be studied. The divisions of the work are many. We can first of all classify industrial welfare work as following the two main divisions, namely, activities inside the factory, and activities outside. The first division comprises the regulation of hours, the regulation of night work for women and children, the securing of suitable hours for rest and holidays, the sanitation and ventilation of factories, the prevention of accidents and the provision of safety appliances, the regulation of dangerous trades, compensation or insurance against sickness, accidents, or old age. In the category of activities outside the factory, we have problems connected with housing and transport, facilities for the purchase of the daily necessities of life, facilities for the exercise of thrift, education, medical aid, facilities for recreation and amusements. On many of these subjects, instructive and illuminating papers have been contributed by recognized authorities, and I am certain that we shall all appreciate the opportunities furnished by the Conference of comparing the methods of work that have been pursued in the different areas and the results that have been achieved. I also hope that our discussions will sow the seed of ideas that will branch forth into novel and useful activities; one such new activity, I hope, will result in creating a link between the village-home of the worker and the industrial area where he establishes himself either temporarily or permanently. I have often felt that a link of this nature would be extremely useful both in attracting labour and in reducing the labour turnover.

Indian Incometax Act, 1922.

The new Incometax Act came into force with effect from April 1st, 1922. The following note summarises the main points in which it differs from the Old Act of 1918 and the changes which will be made in the organization of the department. The object of amending the Act was to consolidate the law relating to Incometax and Supertax to improve the phraseology and arrangement of the Old Act where necessary and to remove doubts, ambiguities and anomalies. It was not the intention of Government in amending the Act either to sacrifice any revenue or to increase the revenue from Incometax and Supertax except in so far as the latter result might follow from improvements in the machinery of administration.

Administration.—It is proposed gradually to organize a separate self-contained Incometax Department, and to relieve the Revenue Department of all work connected with incometax.

The new Act provides for the following departmental organization. There is a central controlling body for the whole of India called the Board of Inland Revenue section 5 (1) a. In each province there is a Commissioner [section 5 (2)] appointed by the Governor-General in Council who takes the place of the Chief Commissioner in Madras and is not as the latter was a Member of the Board of Revenue. Ultimately the Commissioner will merely supervise the general administration of the Department, make references to the High Court and exercise powers of Review and will only exercise appellate powers in special cases. Under the Commissioner there will be Assistant Commissioners, each exercising appellate powers, and supervising the working of the Act under the control of the Commissioner, in a group of districts, while the assessments will be made by Officers called Incometax Officers, of whom one or more will be appointed for a district or a group of districts.

During the transitional stage which will last perhaps 4 or 5 years, the Commissioner will continue to exercise appellate powers as at present, except where whole-time Assistant Commissioners have been appointed and the Commissioner's appellate powers transferred to them, and the appellate and assessing authorities now existing will continue to exercise the same powers as at present in districts to which whole-time Incometax offices have not been appointed.

The only change in 1922 will be in the Madras

District where the Collector has been relieved altogether of incometax work except in regard to the disposal of appeals under the old Act. Three whole time Incometax Officers have been appointed for the Madras District and the work of assessment is distributed amongst them as follows :—

The first Incometax Officer assesses incomes exceeding Rs. 25,000 and will also deal with assesseees who keep their accounts in the Marwari language.

The second Incometax Officer will assess incomes upto Rs 25,000.

The third Incometax Officer will assess salaries.

The first Incometax Officer has also been appointed Assistant Commissioner and will dispose of appeals against the assessments made by the second and third Incometax Officers whose work will also be subject to his general control. Appeals from assessments made by the first Incometax Officer will for the present lie to the Head of the Department—the Commissioner. A number of probationary Incometax Officers has been appointed who will undergo training under the Assistant Commissioner in the Madras Office and on the expiry of their period of probation will be posted to districts in the Central Range which consists of the districts of Nellore, Chittoor, North Arcot, Madras, Chingleput and South Arcot. All returns and other communications relating to incometax matters in the Madras District should be addressed to the Assistant Commissioner of Incometax, Old High Court Buildings, North Beach Road, Madras. Appeals against assessments made by the Assistant Commissioner, Madras or by Collectors of other districts, Revision petitions and communications regarding the administration of the Act generally should be addressed to the Commissioner of Incometax, Chempauk Palace, Triplicane P. O., Madras.

Principal features of the New Act.—The first important point is that the New Act is a consolidated Act dealing with both Incometax and Supertax. The provisions relating to Supertax will be found in Chapter IX.

The rates of tax are not embodied as hitherto in a Schedule appended to the Act, but will be fixed annually by an Act of the Legislature as in England (section 3). For the rates for this year see appendix.

The adjustment system is abolished except that a final adjustment is to be made in the

year 1922-23 on the basis of the income as finally ascertained for 1921-22. The assessment hereafter will be made strictly on the income of the previous year.

In future an individual's share of the income of an undivided Hindu family of which he is a member will not be taken into account for Incometax or Supertax in determining either the rate at which he should be taxed or the amount to which that rate should be applied.

There is no provision for the composition of tax under the New Act. Compositions entered into under the Old Act will remain in force for the period for which they were originally made but no further compositions will be made.

These and other changes are dealt with in detail in the following paragraphs:—

ASSESSMENT.

Basis of assessment.—As already stated the adjustment system will be abolished and the tax will be finally assessed once for all on the income of the previous year. But under section 68 second proviso the assessment made in the year 1921-22 will be liable to final adjustment in the year 1922-23. The result of this will be that businesses earning a taxable income in the year 1921-22 will pay incometax twice on the income of the year 1921-22. A final assessment (adjustment) will be made for 1921-22 on the income of that year, and also an ordinary assessment under the New Act for the year 1922-23 will be made on the income of the same year. This is an anomaly inseparable from the change from one basis of assessment to the other. A similar anomaly—but to the advantage of the assessee—arose when the adjustment system was first introduced in that the income of the year 1917-18 was never finally assessed to Incometax. Section 25 contains special provisions intended to minimise the hardship resulting from the change of system in the case of assesseees who have been taxed under the Act of 1918 and who discontinue business at any time after the introduction of the New Act.

These are dealt with below the head of "Discontinuance of business." Persons deriving income from salaries or income from securities will under executive instructions be treated in exactly the same way in 1922-23 as they would have been treated had no change been made in the Act. Such persons, however, will be liable to pay super-tax in the year 1922-23 on income derived from these sources and they will also be required to pay incometax on income derived from other sources on which

incometax has not been levied at the time of payment.

Salaries.—The provision under the Old Act that where a sum received as "salary" is a non-recurring item, it should be taxed at the rate appropriate to that particular sum as if it were the whole of the assessee's income, gave rise to a considerable amount of unnecessary trouble to assesseees owing to the adjustments that had to be made in the amount and rate of the tax every year. Section 18 of the Act now provides that deductions from salaries shall approximate as closely as possible to the appropriate rate, and empowers the person making the deduction to rectify mistakes in previous deductions when making subsequent deductions. All *private employers* are required by the New Act to deduct incometax from the salaries of their employees and to send a return of the tax so deducted to the Incometax Officer [section 18 (2)] and 21 (1).]

COMMUTATION OF INCOME.

(a) *General*:—The Act does not contain a definition of taxable income. The method of calculating "taxable income" prescribed in sections 12 to 14 (A) of the Act of 1918 has been abolished as it gave rise to various inequalities in assessments. Under those sections "taxable income" meant the income assessed directly on the assessee, that is, his income from sources other than the dividends of a company or his share in the profits of a firm, so that an assessee who had income either from a firm or from a company, and had in addition other income which was assessed to incometax directly on him, paid no incometax on that other income unless it was in excess of Rs. 2,000 while *per contra* he got no deduction on account of insurance premia set against the income that he derived from a company or firm. Section 3 provides that incometax shall be levied in each year on the total income for the previous year of every individual, company, firm and Hindu undivided family at the rates laid down in the Finance Act for the year. Section 16 (1) states how "total income" is calculated and "total income" is defined in section 2 (15) as the total amount of income, profits and gains from all sources to which this Act applies computed in the manner laid down in section 16. Section 14 (1) provides that an assessee shall not be taxed in respect of his share of the income of an Undivided Hindu family of which he is a member and under Sections 16 (1) his share of such income is not included in his total income. Section 14 (2) and 15 (1) and

(2) read with section 16 (1) provide that an assessee shall not be taxable in respect of

(a) dividends that he receives as a shareholder in a company if the company has been assessed to incometax,

(b) his share of the income of a firm if the firm has been assessed to incometax and

(c) insurance premia and sums paid to secure an annuity or as contributions to certain provident funds.

But all such sums (a), (b) and (c) unlike the individual's share of the income of a Hindu undivided family, are included in calculating total income, that is, they affect the rate at which the individual is taxed. It is to be noted that the individual's share of the profits of a firm is to be taken in calculating his total income in order to determine the rate at which he is assessable, to be his share of the total profits irrespective of any stipulation that he shall not be allowed to draw more than a certain sum or a certain proportion of his share in a year, or that any part of his share should be devoted to charity, etc.

(b) *Accounting Methods*.—By section 13 it is now made clear that income is to be calculated for the purpose of the Act in accordance with the system of accountancy regularly adopted by the assessee, provided that the system is such that the results may reasonably be considered in the opinion of the Incometax Officer adequately to represent the assessee's income. If the Incometax Officer is not satisfied in this respect he has discretion to determine the basis on and the manner in which the income should be computed. He has the same discretion if the assessee has not regularly employed any particular method of accounting. Consequently if the assessee regularly keeps his accounts according to the mercantile system of accounts (taking into account book credits and debits—calculating on the “accrued basis”) his income should be calculated to that system. If on the other hand he regularly keeps his accounts on the cash basis (taking into account only actual and constructive receipts and expenditure) the incometax officer must calculate his income according to that system. An assessee cannot be allowed to change from one system to another as he pleases. If he so changes his system he cannot be said to be regularly employing either system, and in any year in which an assessee makes such a change of system it is the duty of the Incometax Officer to decide what modifications are

necessary in the results shown by the accounts in order to arrive at the assessee's true income. It should be noted that section 10 (3) specifically provides that the word “paid” used in respect of sums which under that section may be deducted, means actually paid, or merely debited according as the system of accountancy adopted by the assessee is the cash system or the mercantile system. The provisions of section 13 only apply to income derived from business, professional earnings and other sources, i.e., they do not relate to income from salaries, income from interest on securities or income from property.

(c) *Depreciation*.—Under section 10 (1) (6) depreciation on furniture is now allowed as well as depreciation on buildings, machinery and plant. It is no longer necessary that depreciation should have been actually debited in the accounts [section 10 (2) (6) proviso (a)] and where there is no taxable income in any year or the taxable income in any year is less than the depreciation allowable, the claim for the whole or balance of depreciation may be renewed in subsequent years until it has been fully adjusted. [section 10 (2) (6) proviso (b)]. The rates of depreciation shall be fixed rates and not maxima as they were under the Old Act.

(d) *House Property (Section 9)*.—For the expression “house property” in the Old Act the word “property” has been substituted in the New Act, and under section 9 (1) the word is defined to mean the annual value of property consisting of buildings or lands *appurtenant thereto* of which the assessee is the owner excluding portions occupied for the purposes of his own business. In the Old Act there is no reference to lands appurtenant to buildings. The definition of “property” in the New Act thus includes business premises that the assessee has let to another. Under the Old Act the income from these has to be brought under “other sources”. Under the New Act the income derived from vacant lands let out for storing materials, etc., will be liable to taxation under section 12 as income from “other sources”. The allowances for which the Old Act provides in respect of residential house property apply to “property” under the New Act. But there is a proviso that the aggregate of the allowances must not exceed the annual value. Consequently, if property is subject to a mortgage (for example) and the interest on the mortgage exceeds the amount which would otherwise be assessable in respect of such property, the assessee cannot claim

that he has made a loss in respect of the property, and that this loss should be set off against his income under other heads.

(e) *Insurance* : (1) *Furniture—Stocks and Stores*.—Under section 10 (2) (4) premia paid in respect of the insurance of furniture, stocks or stores used for the purposes of the business are now allowed as a deduction, as well as premia in respect of the insurance of buildings, machinery and plant.

(ii) *Internal Insurance*.—Sums transferred to a reserve in connection with any scheme by which a Firm or Company insures its own premises, etc., cannot be allowed as a deduction.

(iii) *Life Insurance*.—Life Insurance premia, contributions to provident funds, etc., have been referred to above under "Computation of total income", but it is to be noted that under section 14 (2) in assessing a Hindu undivided family premia paid in respect of the insurance of the life of any member of the family (including minors) or of the wife of any such member must be allowed.

(iv) *Loss of Profits on Rents*.—Under departmental instructions premia paid on account of insurance against loss of profits or rents may be allowed if the assessee agrees in writing that any sums recovered under the policies shall be assessed to tax.

(v) *Private Provident Funds not covered by section 15 (1)*.—Employers' contributions to such funds may be allowed as a deduction if the funds are the subject of an irrevocable trust and can in no circumstances revert to the employer.

(f) *Losses*.—Section 24 (1) now makes it clear that if an assessee sustains a loss under one head of income he is entitled to have such loss set off against the income under any other head in the same year. Section 24 (2) provides that if the assessee is a Registered firm and the whole of such a loss cannot be set off against other income of the registered firm each member of the firm is entitled to have his proportionate share of the balance or excess of loss set off against his own personal income on which the tax is payable by him in the same year.

(g) *Previous year*.—Under section 2 (11) (b) the Board of Inland Revenue or any authority to which it has delegated its powers in this behalf, can declare what period shall be taken as the previous year in any case or class of cases. This provision is intended to meet the case of assessee who close their accounts for the Tamil, Guzerati, etc., years which may end sometime after the official year or be

longer or shorter than 12 calendar months.

(h) *Repairs*.—Under section 10 (1) (5) the cost of repairs to furniture is now allowed as a deduction as well as that of repairs to buildings, machinery and plant.

(i) *Securities—Interest on Loans*.—Where an assessee has borrowed money to buy securities the interest on the loan may under executive instructions be set off against the income from the securities on production of a Banker's certificate as to the amount of such interest.

(j) *Subscriptions to Mutual Benefit Societies*.—Subscriptions or recurring payments to Mutual Benefit Societies to which the explanation to sub-section 2 (iii) of section 10 has been extended by executive order or rule, are to be regarded as borrowed capital. So the interest on these sums is an admissible deduction in calculating the assessable income of the Society.

Discontinued Businesses.—Section 25 (1) provides that when any business, etc., is discontinued an assessment may at the Incometax Officer's discretion be made in the year in which it is discontinued on the income for the period between the end of the previous year and the date of discontinuance. This corresponds to the immediate adjustment provided by section 19 (last proviso) under the Old Act. This subsection only applies to businesses, etc., which commence after the coming into force of the New Act. Persons discontinuing any such business are required by section 25 (2) to give notice of the fact to the Incometax Officer and are liable to a penalty for failure to do so.

Section 25 (3) deals with the discontinuance of businesses which were in existence when the New Act came into force. In such cases no tax is payable on the income for the period between the end of the previous year and the date on which the businesses were discontinued. The reason for this is that, as already stated, such businesses will have paid incometax twice on the profits of the year 1921-22. It is further provided that in such a case, if the income of the period between the end of the previous year and the date on which the business was discontinued is found to be less than the income of the previous year, the assessee may claim an adjustment of the tax paid on the income of the previous year, with reference to the income of the period between the end of that year and the date on which the business was discontinued.

Under section 44 when a firm has discontinued business, etc., all persons who were members

of the firm when it discontinued business are jointly and severally liable for the amount of the tax payable by the firm.

Double Incometax.—Section 49 provides that where a person who has paid incometax in India proves that he has paid incometax on the same income for the same year in the United Kingdom and that the rate of relief allowed in respect of such double taxation in England is less than the rate of tax levied in India on the income, he is entitled to a refund of tax on such income at a rate equal to the difference between the Indian rate of tax and the rate of relief allowed in the United Kingdom, but not exceeding one half of the Indian rate of tax. This provision seems somewhat complicated but the object is to secure that in such cases the assessee should only pay in all at a rate equal to the Indian or the English rate of tax, whichever is higher, and nothing more. It will have this effect so long as the Indian rate is not higher than the English rate.

Exemptions: (a) *Agricultural Income.*—Section 2 (1) now makes it clear that the exemption in respect of agricultural income only applies where the land from which the income is derived is situated in British India. Income derived from the sale of produce by a cultivator or receiver of rent in kind is now exempt if he keeps a stall or shop for the sale of such produce.

(b) *Dividends and Income from Firms.*—It has to be noted that an assessee is only exempt from liability to pay tax personally on income from dividends or on his share of the income of a firm if the firm, or the company from which he derives the dividend, *has been assessed to Incometax.* Section 14 (2).

(c) *Hindu Undivided Family.*—Under section 14 (1) an assessee is not liable to pay tax personally on his share of the income of a Hindu undivided family, and this exemption is not qualified by the proviso that the Hindu Undivided family must have been taxed.

(d) *Insurance Provident Funds.*—See under “computation of income” above.

Procedure Assessment—Returns.—The period within which the annual return of salaried employees has to be made has been extended from 15 to 30 days. The period within which a return has to be made under section 22 (2) of the New Act shall not be less than 30 days. Under section 22 (3) if a return is not made within the prescribed time, or if an assessee who has made a return subsequently discovers any mistake or omission in it, he may make a return or submit a revised return as the case

may be at any time before the assessment is made, and any such return or revised return is to be deemed to be a return made in due time.

Under section 27, even when the assessment has been made it is open to the assessee to prove, within one month of the service of the notice of assessment, to the satisfaction of the Incometax Officer, that he was prevented by sufficient cause from making a return; and if he does so the Incometax Officer is bound to re-open the assessment proceedings.

RETURNS BY COMPANIES.

Under section 21 a person other than the principal officer of a company may make a return of the Company's income where this is found more convenient.

Accounts and Evidence.—Under the Old Act accounts cannot be called for except under section 27 unless an assessee has made a return. Under section 22 (4) of the New Act the Income-tax Officer may call for accounts or documents from anybody on whom he has served a D notice whether the notice has been complied with or not. Under this sub-section he cannot call for evidence other than accounts or documents.

Under section 23 (2) the Incometax Officer may call on an assessee who has made a return to produce the evidence on which he relies in support of it, and under section 23 (3) the Incometax Officer may also call in such cases for any accounts or other evidence that he may require. Full details of such accounts or other evidence must be given in the notice.

Under section 27 it is open to an assessee who has not complied with a notice calling for accounts or documents under section 22 (4) or for evidence in support of the return under section 23 (2) to prove to the satisfaction of the Incometax Officer within one month from the service of the demand notice that he did not receive, or had no reasonable opportunity of complying or was prevented by sufficient cause from complying with the notices, and in that case the Income-tax Officer is bound to re-open the assessment.

Branch Businesses.—Under section 64 (4) every Incometax Officer has all the powers of an Incometax Officer in respect of any income, profit or gains accruing or arising or received within his jurisdiction. Consequently the Incometax Officers of places where assessee have branch businesses can call for the accounts of such branch businesses and examine them and have full power to deal with any default

by the assessee in complying with notices calling for accounts.

Businesses—Change in Ownership.—Under section 26 where there is any change in the constitution of a firm or when any person succeeds to any business, etc., the assessment shall be made on the newly constituted firm or on the person actually carrying on the business, etc., at the time when the assessment is made.

Firms.—The distinction between registered and unregistered firms is retained and also the special Registration with the Collector.

Foreign Income.—Under section 4 (2) the accumulated profits of a business outside British India are deemed to be profits and gains of any year in which they are received or brought into British India provided that they are received or brought into British India within 3 years of the end of the year in which they actually accrued or arose. This is an important new provision, and it should be specially noted that if an assessee *brings* foreign profits into British India within three years they are deemed to be received in British India. Hitherto it has been held that profits *brought* into British India by an assessee himself cannot be held to be received in British India. It must also be noted that the explanation to section 4 (2) provides that income accruing or arising abroad is not to be deemed to have been received into British India merely because it is taken into account in a balance sheet prepared in British India.

Mistakes and Omissions in Assessment.—Under section 34 if income has escaped assessment or been assessed at too low a rate in any year a notice under section 22 (2) may be served on the assessee at any time within one year after the end of such year and he may thereafter be assessed or re-assessed. Thus the income of the year A which should be assessed in the year B can be assessed under this section provided that the notice is served at any time in the year C. Under section 35 (1) the Incometax Officer may rectify a mistake in assessment at any time within one year of the date of demand notice, either on his own motion or on the application of the assessee. The power conferred under this section is restricted to "actual mistakes apparent from the records," that is to say, it is *not* intended to confer on the Incometax Officer a general power to review his own assessment, nor does it entitle the assessment to let in fresh evidence and claim that the assessment should be modified on the basis of such evidence. If the correction of a mistake

under this section has the effect of enhancing the assessment the assessee must be given a hearing.

References to High Court.—Under section 66 a reference to the High Court can only be made by the Commissioner. If an assessee demands a reference on a question of law the Commissioner has no discretion to refuse to make a reference. If the Commissioner decides that there is no question of law involved, the assessee may apply to the High Court to direct the Commissioner to make the reference.

An assessee who claims a reference must deposit a fee of Rs. 100 or such lesser sum as may be required by the Board of Inland Revenue. The payment of tax is not to be suspended in consequence of a reference to the High Court — but if as a result of the reference any refund is due to the assessee the Commissioner may allow interest on it.

An assessee cannot claim a reference to the High Court unless he has exhausted his rights of appeal under section 31 and 32. If the Commissioner is himself prepared to decide in favour of the applicant on the point of law raised the applicant under the proviso to section 66 (2) may withdraw his application for a reference if he is satisfied with the Commissioner's order on review.

Refunds — Income from Securities.—These may hereafter be made either in the District where the assessee resides if he is not assessed or in the District where he is assessed. Moreover a certificate that tax has been deducted at a certain rate under section 18 (9) or section 20 is to be accepted as conclusive evidence on the point. Tax on securities need not necessarily be deducted in all cases or at maximum rates. No deduction need be made, or the deduction may be made at the rate actually applicable to his total income, if the holder produces a certificate from the Incometax Officer to the effect that his total income is not taxable or that the rate applicable to the income is less than the maximum rate, as the case may be. Such certificates are to remain in force until they are cancelled by the Incometax Officer.

Representation of Assessee in Proceedings under the Act.—Under section 61 an assessee may be represented in any proceedings under the Act by any person authorized by him in writing to appear on his behalf. Since the assessee may be represented by any person duly authorized it naturally follows that there is no longer any objection to accountants and

auditors representing assesseees in appeals or other proceedings under the Act.

Appeals and Reviews.—The cases in which an appeal lies to the Assistant Commissioner from an assessment or other order made by the Income-tax Officer are specified in section 30. Appeals against

1. Assessment under section 23.
2. Re-assessment under section 27.
3. Refusal to re-assess under section 27.
4. Penalty for failing to give notice of discontinuance of business, section 25 (2).
5. Penalty for concealment of income, section 28.

No appeal lies if an assessee has not made a return before an assessment or re-assessment under section 27 is made.

It is no longer obligatory to file a copy of the order appealed against with an appeal.

Section 28 authorizes the Assistant Commissioner to impose a penalty for concealment of income when disposing of an appeal. Under section 32 an appeal lies to the Commissioner from an appellate order of the Assistant Commissioner enhancing an assessment and against the Assistant Commissioner's order imposing a penalty for the concealment of income.

Under section 33 the Commissioner may review the proceedings of any subordinate authority or any proceedings taken by himself when exercising the powers of an Assistant Commissioner.

Under section 28 (1) the Commissioner when exercising his appellate or review powers may impose a penalty for concealment of income.

Payment of Income-tax.—Under section 45 the period within which the tax is payable is to be reckoned from the date of service of the notice or order and not from the date of the notice or order.

Under section 46 (7) no proceedings for the recovery of any sum payable under the Act shall be commenced after one year from the last day of the year in which the demand is made. An exception to this rule is provided in the case of sums due from non-residents under section 42 (1) :—

(a) *Supertax.*—Under section 56 supertax is payable in respect of the income of individuals, unregistered firms, Hindu undivided families and companies. As in the case of Income-tax the rates will be prescribed annually by Act of the Legislature. The total income determined for income-tax is to be taken as the total income for supertax but the actual sum taxable will differ in the following respects

under section 58 (1):—

(1) Pensionary contributions, etc., of Government Officers which are not liable to income-tax under proviso to section 7 (1) are not to be deducted for supertax.

(2) The interest on Government securities issued free of Income-tax is liable for Supertax.

(3) Income derived from dividends of a company are assessable to Supertax, irrespective of whether the Company is liable to Supertax. The partners of unregistered firms are not liable to Supertax, on their share of the income of the firm if the firm is taxed to Supertax. A registered firm is of course not liable to Supertax.

(4) Life insurance premia, contributions to private funds, etc., exempted from income-tax under section 15 are not exempted from supertax.

The provisions of section 17 in regard to the reduction of tax when the margin of income above a certain limit is small do not apply to Supertax.

(5) Supertax on dividends, salaries, and Government securities is payable direct and not by deduction at source.

(b) *Non-resident Partners and Shareholders.*—Under section 57 (1) the Supertax due by a non-resident member of a registered firm on his share of the profits of the firm may be recovered from the members resident in British India and similarly the Supertax due on dividends paid to any non-resident shareholder in a company may be recovered from the principal officer of the Company in British India, if the amount of profits or of the dividends payable to the non-resident partner or shareholder is by itself liable to Supertax.

APPENDIX.

RATES OF INCOME-TAX.

A. In the case of every individual, every unregistered firm and every undivided Hindu family.—

(1) When the total income is less than Rs. 2,000.—Nil.

(2) When the total income is Rs. 2,000 or upwards but is less than Rs. 5,000.—Five pies in the rupee.

(3) When the total income is Rs. 5,000 or upwards but is less than Rs. 10,000.—Six pies in the rupee.

(4) When the total income is Rs. 10,000 or upwards but is less than Rs. 20,000.—Nine pies in the rupee.

(5) When the total income is Rs. 20,000 or upwards but is less than Rs. 30,000.—One anna in the rupee.

(6) When the total income is Rs. 30,000 or upwards but is less than Rs. 40,000.—One anna and three pies in the rupee.

(7) When the total income is Rs. 40,000 or upwards.—One anna and six pies in the rupee.

B. In the case of every company and every registered firm, one anna and six pies in the rupee whatever its total income.

RATES OF SUPERTAX.

In respect of the excess over fifty thousand rupees of total income :—

1. In the case of every company.—One anna in the rupee.

2. (a) In the case of every Hindu undivided family—

(i) in respect of the first twenty-five thousand rupees of the excess.—Nil.

(ii) for every rupee of the next twenty-five thousand rupees of such excess.—One anna in the rupee.

(b) in the case of every individual and every unregistered firm for every rupee of the first fifty thousand rupees of such excess.—One anna in the rupee.

(c) in the case of every individual, every unregistered firm and every Hindu undivided family—

(i) for every rupee of the second fifty thousand rupees of each excess.—One and a half annas in the rupee.

(ii) for every rupee of the next fifty thousand rupees of such excess.—Two annas in the rupee.

(iii) for every rupee of the next fifty thousand rupees of such excess.—Two and a half annas in the rupee.

(iv) for every rupee of the next fifty thousand rupees of such excess.—Three annas in the rupee.

(v) for every rupee of the next fifty thousand rupees of such excess.—Three and a half annas in the rupee.

(vi) for every rupee of the next fifty thousand rupees of such excess.—Four annas in the rupee.

(vii) For every rupee of the next fifty thousand rupees of such excess.—Four and a half annas in the rupee.

(viii) For every rupee of the next fifty thousand rupees of such excess.—Five annas in the rupee.

(ix) for every rupee of the next fifty thousand rupees of such excess.—Five and a half annas in the rupee.

(x) for every rupee of the remainder of the excess.—Six annas in the rupee.

Use of Fertilizers.

The increasing scarcity of farmyard and stable manure directs attention to the necessity for making use of other materials for the purpose of maintaining the fertility of the soil. Some rely, and unwisely, on artificial manures alone. They are undoubtedly of great value when used with discrimination, but they cannot replace farmyard manure, for the great merit of this is that it provides humus; if it is unobtainable, such materials as seaweed, leaves, and soft or leafy refuse from the garden must be substituted. The practice of green manuring, which consists of sowing a quick growing crop, such as mustard; and in digging the plants into the ground when they are well developed, is also of value in supplying humus, without which the land cannot be maintained in a fertile state, says the *Morning Post*. If, however, the soil is adequately supplied with humus, or decayed vegetable matter, artificial fertilizers can be applied with great benefit. Nitrate, potash, and phosphate are essential to plant growth, and these substances can be supplied conveniently by means of artificial fertilizers. The effect of an application of nitrate is to promote leaf growth, and this substance is therefore valuable for the lawn

and for the plants grown for the sake of their leaves. It is often also applied to backward or weakly plants for the purpose of giving them a fillip. Phosphatic fertilizers assist the flower and fruit-bearing parts of trees and shrubs and are indispensable when it is desired to ensure well-matured growth that is likely to provide abundant blossom or fruit. Potash is beneficial because it improves the quality of crops, and especially those of certain vegetables, such as potato, parsnip, and beetroot, and various fruits. An application of potash is less likely to be needed on cultivated ground, that is not deficient in lime, than the other two fertilizers—nitrate and phosphate, for it is generally present in sufficient quantity except for those crops specially mentioned as needing it. For general application to garden crops, superphosphate of lime, five parts, and sulphate of Ammonia, two parts applied in spring at the rate of three ounces per square yard, form a valuable fertilizer. Amateur gardeners who do not wish to obtain various artificial manures separately, and mix them, must rely on the concentrated fertilizers that are now so largely used.

Coconut Stem-Bleeding Disease.

By S. Sundararaman, Government Mycologist, Madras.

Where is the disease found? Coconut trees suffer from a disease somewhat resembling the bleeding of animals. It has been noticed in Ramnad, Madura, Tanjore, Tinnevely, South Kanara, Malabar and Chingleput districts. It is found under different conditions of soil and drainage but the attack is severe in trees growing in places which are water-logged or alkaline in nature where soil does not get enough air.

2. How is it known to the people? It is called in Tamil "Saru-ozhughal noi" (oozing of juice); in Telugu "Lakka uragadam" (exudation of lac-like fluid) and Malayalam and Kanarese "Rakthakari-roga" (blood oozing disease).

3. Symptoms of the disease: The first sign that the disease has entered a tree is, when you see a reddish brown liquid coming out from the surface of the stem. This liquid is reddish brown in colour. When it dries up, it turns black. If this portion of the stem is cut with a knife or chisel, the stem inside, instead of being reddish, is yellow and is also rotten. In the first stage, this rotting is found only in one place. In advanced cases when the liquid comes out from more than one point in the tree, the whole stem inside turns yellow and becomes rotten. If the stem is rotten inside, the tree does not produce any coconuts. The top of the tree becomes smaller and smaller day by day and later on dries up. If a young tree gets this disease, the whole stem rots and a big cavity is formed in the central portion. If this portion is cut with a knife, a yellowish fluid comes out in large quantities. Such young trees die very quickly. It is not possible to do anything to save these trees. The whole tree should be dug out, every bit of the root should be carefully removed and burnt in a place.

4. How is this disease cured? This disease causes greater harm to younger than to grown-up trees. If the damage is only in one place, the easiest and most effective remedy is to cut out the diseased parts from that particular portion. The rotten portion should be completely cut out with a little of the healthy tissue, say, about one inch. By this means tree-owners may be sure that all the rotten matter has been removed from the stem. It is very easy to find out how much should be cut, because the rotten portion is yellow

and can be easily distinguished from the healthy portion which is red and shows the colour of flesh. Bits of the rotten tissues should not be allowed to lie about in the garden, because other trees will get the disease from these bits. Coconut garden owners do not pay sufficient attention to these instructions. They think that the disease is brought about by God's curse or bad weather or bad star. They should clearly understand that rotten diseased bits lying about in the garden contain germs of the disease which can very easily infect other plants. Therefore, it is very important that the gardens should be kept in a thoroughly sanitary condition, and that all diseased materials in the garden should be gathered and buried deep in a pit, preferably burnt. In cutting out the rotten portion inside the stem, care should be taken to remove every bit of the diseased portion and to apply hot tar over the cut surface immediately. An ordinary 1-inch chisel and a hammer are required for cutting. As the cut surface is wet the tar will not stick well. The surface is therefore dried by passing a lighted torch over it. Tar is known to every one and can be had from every bazar. It is heated and applied over the cut surface. For this treatment to be successful it is very important that all the rotten matter in the stem should first be completely removed.

5. To mention an instance, in Sholavandan in Madura district 100 coconut trees were noticed showing this disease. In every tree the rotten portion was completely removed with a chisel and hot tar was applied to the cut surface. All these 100 trees are now healthy, free from disease and are now bearing bunches of coconuts.

Evidence of a continued movement of trade in the direction of the United Kingdom is shown by returns prepared by the parcels post section of the Postal Department of Jamaica on the subjects of imports during the season from December 15 to January 10. The returns show that during that period of 1920-21 4,626 parcels were received at the General Post Office in Kingston from Great Britain, against 7,015 from the United States. The figures for the corresponding period of 1921-22 show that 6,389 parcels were received from the United Kingdom against 8,247 from the United States.

Help to Hard-Pressed Farmers.

By P. V. Gharpuray, Bar-at-law, Wardha (C. P.).

This question is the more important in our National affliction of draught and the lack of pasturage connected therewith, than can occupy any true friend of this country. And this question cannot be adequately answered by Mushroom-phrases or sugar-coated utterances. It will never be solved in the Imperial or Provincial Councils though Legislation is also in this matter an important factor. The farmers alone could decide this; in their hands lies the future of our people. The matter at stake is the most valuable possession a people can have, their native land and soil; these are faring ill. Our land is not only being more heavily encumbered with mortgages every year but is also losing some of its good qualities and fertility and as the debt increases the value decreases. But there is no use in merely lamenting over it; it must be improved and amended. And it can be improved, if we only open our eyes and see and learn and sincerely act in accordance with that which we learn.

Either the unexhausted new soil or restoration of nutrition consumed must be added to the soil of our fields. One or the other must take place; where neither has been done, as by the first European settlers in America the crops decreased and the settlers moved from the East further to the West, in order to gain more yields from the as yet unexhausted soil. But now they have also come to see in America that they cannot continue thus, as there are no more domains without owners into which they can emigrate, without let or hindrance. Same is the case with us. When it was found that soil would not yield any more despite of deep ploughing, the solid and liquid manure of the domestic animals had to be brought on the fields and thus the dung-heaps began to be valued. By the aid of this dung the fields were kept fertile although this was a mere make-shift. This make-shift has become a familiar one for several centuries, all over the world. So that even in times of our great fathers the saying was in vogue "Without Manure nothing will grow". So men came pretty generally to the position that we must bring dung to an exhausted field, else nothing can grow; men directed their attention to that part of the food (for soil) which cattle do not assimilate but excrete for manure. Now in order to get manure we must raise as many

cattle as practicable. For these stables and attendants are necessary. In this it was overlooked that cattle would require again considerable acreage for their nutrition and the ground thus used could not be used to raise crops. So that in such an economy it was necessary to work the fields for the sake of the cattle and not for the sake of men. Now since it is said nothing would grow without manure, manure must be used to make the fodder grow on which cattle could be fed, in order to produce manure for more fodder. In such a circle of life, where does the advantage of keeping cattle come in? But finally the thoughtful and book-keeping farmers had to come to the conclusion that the raising of cattle only pays in mountainous regions. In these regions raiser of cattle can put his hands into his pocket. But elsewhere the ox rather eats money out of the owner's pockets, than into them. But any way, the production of milk, butter, wool as well as the necessities of having animals for driving, makes the raising of cattle a factor that must be taken into consideration. But is it possible for the farmers generally to maintain cattle on such a scale as is required for getting sufficient manure for their fields. The fact that the stable manure, undoubtedly, promotes the growth of plants gives to it a certain value. It could therefore be summarised that, as above said, the dung-heap had been recognized as the augments of fertility; and dung-heaps were considered as the natural condition '*Sine qua non*' for the growth of crops; although, this was by no means founded on the natural order, but was only a make-shift. When once the rule was established that the artificial was normal, none should be surprised that when stable manure would no more satisfy, some people recommended artificial manure. Large land-owners were more attracted by the artificial manure than the simple peasants. It can easily be seen that oxen and cows no matter how high their cost, charged no salary for producing their manure; but it was otherwise with the chemist and the dealers in artificial manures. These not only demanded to be nourished themselves, but also desired to increase their capital. Some dealers made their fortunes by these manures but that was not the case with agriculturist using the same. The Scientist made a chemical

investigation of the soil and founded a Law of *Minimum*. By that Law is meant, "One of the substances which the plant requires and which is contained in the Minimum quantity in your fields, you must furnish to it, in the form of a fertilizer.

The teachers of agriculture announced:—Of potash and phos-aid (these most important nutriments of plants) there is only a *Minimum* left in the soil, therefore we must first of all supply potash and phos-aid to our fields; to these two substances, *Nitrogen* was also added. The result is that the use of the Superphosphates, Sulphate of Ammonia, Chili-nitre has enormously increased; but some farmers raised doubts and said the crops of peas and beans rich in Nitrogen, prosper on soil entirely void of Nitrogen as the plants and also the Leguminous plants derive their whole supply of Nitrogen exclusively from the air which consists of the four-fifth of Nitrogen.

For instance, the Oak-trees grow to gigantic size, on bare rocks of granite. The Oak-leaves contain one full per cent of their weight of Nitrogen, while Oak-wood is devoid of Nitrogen. The Nitrogen of leaves has evidently been furnished not by the rock but by the air. It is therefore manifest that if the soil were the proper source of Nitrogen the roots being in immediate contact with the soil ought to show at least as much Nitrogen as the parts far above the ground which are surrounded with air; but on the contrary they contain the artificial manures (*i.e.*, Superphosphates, Sulphate of Ammonia, Chili-nitre) which supply the plant with too much forcing material and too much Phosphoric Acid a substance which surely causes plant-lice, caterpillars, snails and the like.

Really speaking, Earth, Air, Water and Sun-shine must co-operate to produce a fruitful growth. We entrust our seeds to the Earth. What is the Earth? The Earth or soil is disintegrated primitive rock (gneiss granite porphyry). The soil of our fields is continually being increased by the disintegration of primitive rocks and from this there grow up grasses, herbs, shrubs and trees; without mineral constituents no plant can grow up. Now when in level plains the upper layer of the soil through long cultivation has become exhausted of certain necessary mineral constituents, new rocky material must be provided from which nothing has as yet been grown, which therefore still contains all its strength; this is not only the most natural, but also the simplest and at the same time the

cheapest way to increase and maintain the yield of our fields; in short it gives increased quantity as well as better quality of the crops sown. This is not mere theory, thought out in the study but experience and success have demonstrated it; with Scientists like Dr. Hensel who have worked in these lines there is no more need of experiments but merely of demonstration. A firm in Rhenish Palatinate has produced a variety of such fertilizers, out of pulverized rocks as are most suitable for the various crops. Such a Fossilizer is found in every primitive rock. If we wish to grasp quickly and completely the correctness and importance of manure, we need only to consider the cases of Uruguay and Argentina or of Egypt. In Uruguay and Argentina the livestock is estimated at about 32 millions (beeves, sheep and horses); of these, there are now killed for export every year about 1¼ million and the bones of these animals are carried by ship-loads to Hamburg. It is self-evident that the animals take *Phosphate of Lime* for their bones, *Nitrogen* for their flesh and for the *glue* in their bones, from the grass they eat. But the grass draws the necessary nitrogen from Air; the Phosphate of Lime, which continually passes from the country in the form of bones, is received by the grass from the exhaustible calcareous porphyritic *Mud* which is carried down through millions of gorges from the Cordilleras by the mountain streams and which flows as a primitive.....manure into the eastern plains. In Egypt this is effected by the Nile Mud, which the mountain streams bring down and which is conveyed by the Nile in fructifying abundance to the Delta, which thereby becomes the granary of Egypt.

The true cure of an exhausted soil consists in supplying it with comminuted rocks, especially granite gneiss, porphyry and lime. Thereby the plants receive again what they naturally demand. The best proof of these views, given on great scale is thousand of year old, *i.e.*, the fertility of Egypt. The mud of the Nile consists almost exclusively of finely comminuted rocks with very few organic nitrogenous constituents. But the flooded district owe their unexampled fertility to just this precipitated stone dust. In short, it can be seen that almost every field contains stones which have only been acted upon in part by the dissolving moisture of the soil and which therefore shows a more or less rounded form. These stones, as they injure the spade or plow, are usually removed to the sides of the field,

and there heaped up, and are then sold at a cheap rate, for use on high ways. The farmer who acts thus sells his birth-right; so to say, for less than a pottage of lentils; for he removes the various sources of fertility from his field. If such stones are heated in the stove or on hearth for half an hour and then thrown into water they become so friable that they may be broken into small pieces by the hands and may easily be pulverized with a hammer. It is desired that these developments should find a wide diffusion. Such pulverized powder is a good fertilizer and be properly called stone-meal.

The farmer ought to give up his old prejudices and himself try and see whether the new fertilizer is better than the old one, in every respect. The Scientists and Professors may perhaps ignore this new source of fertilizing, need not astonish any one; for it is a well-known maxim "No two doctors agree and it may soon become a proverb" "no two scientists agree" or that "the professors are opposed to it, therefore it is good." For hitherto, the scientists and scholars have always opposed everything good at its first appearance.

When at some future date the Indian farmer and through him all the Indian people shall enjoy the blessings of this new improvement of the soil, we shall yet receive thanks that we helped to prepare the path for this new good, during its trying and hard times.

The stone-meal improves the nutrition of the plants without forcing them. Mineral manure is the most profitable, most lasting (and what is not to be overlooked, an entirely odorless fertilizer). If we look at men who live in mountain regions we observe a far more quiet bodily activity, little perspiration, little thirst, great continuous muscular power. In both these cases the constitution will be more normal and freer from parasites (diseases). If I have succeeded in calling attention of the Indian farmers and of creating some enthusiasm in them as to the effect of rock-manure, the object of these lines is attained. When the use of this manure would be followed by profitable results, the satisfaction of my humble-self (of having done something for my brother farmers) will in the most literal sense be my full reward.

Herr Stinnes's Plans.

During the last fortnight reports have been circulated in Vienna of the acquisition by Herr Hugo Stinnes of a number of Vienna newspapers.

Negotiations have certainly been in progress between the proprietors of the Elbermühl, one of the big Austrian paper mills which has several papers depending upon it, and the Aussen Anzeiger Gezellschafft, commonly known as the Ala, for the sale of a controlling interest in the Elbermühl. The Ala is a German syndicate with Stinnes capital, which owns, among other newspapers, the *Lokal Anzeiger* in Berlin and the *Alpenland* published at Innsbruck. The *Alpenland* is the chief organ of the Austrian pan-Germans and agitates unceasingly for the union of Austria to Germany. The four papers owned by the Elbermühl are not of great importance and are more or less insolvent. The chief of them is the *Allgemeine Zeitung*, which is the principal financial daily in Vienna. The mill is by far the most valuable part of the property, the journals being in reality merely a means of selling paper. The deal, if concluded, would have no effect of great importance, but it would be in keeping with Herr Stinnes's policy in Austria which aims at the general extension

of his control over industrial resources side by side with the organization of German as opposed to Jewish financial interests. The advancement of pan-German ideas is always a guiding motive in his enterprises.

Herr Stinnes's chief Austrian interests lie in the well-known Alpine Montana Gezellschafft, the one big coal and iron concern in Austria, in which he acquired a share over a year ago. Thanks to the Stinnes's industrial connexions the Alpine Montana has been able in the past year to keep three furnaces going as against one the year before. The Stinnes's operations in Austria have been directed towards two main objects, first, the strengthening and linking up of the various provincial concerns in order to ensure their independence from the big Jewish banking group in Vienna, secondly, the methodical acquisition of mining rights of all sorts. The mountains of Austria, as is well known, contain valuable mineral deposits, which have been only partly developed of silver, gold, lead, zinc, and quicksilver. Herr Stinnes's attention has been devoted chiefly to Salzburg, where his agents are said to be very active indeed, and to Carinthia. This is doubtless a provision for eventual development.

Indian Prosperity.

By Sir Alfred Chatterton, Kt.

It is well to keep in mind the relative importance of the various items which make up the sum total of the economic activities of any community. Just now, there is a widespread movement in favour of a return to a simpler state of existence as a protest against the materialistic tendencies which have been developed by the introduction of Western ideas into this country. The keynote of the British administration is "efficiency" and it must be admitted that, whilst great success has been attained in this direction, it has been paid for somewhat dearly by alienating the sympathies of the people. For just a century, broken only by one brief interval, the *pax Britannica* has been maintained throughout the land and the Indian of to-day completely fails to realize the state of insecurity and turmoil from which he has been delivered. He has a wider outlook, new aspirations and a craving for political power which fills his mind with resentment because only to a limited extent is he able to gratify these freshly aroused mental activities. He chafes at the restrictions with which he is surrounded and at one bound would be rid of them all. His leaders, realizing that force will not accomplish this object, are seeking to attain freedom from restraint by an attempt to wriggle out of the bonds by which an orderly and civilized Government keeps in subjection the unruly elements of a very heterogeneous society. To secure this end, there has been started a movement known as "passive resistance" accompanied by active measures to secure a return to the industrial status of the early eighteenth century when the land supported about one-third of its present population and the majority of these *per force* were content with what would now be considered less than the bare minimum of clothing for the poorest class of field labourer.

The substitution of machine for hand spinning was the first of the many modern inventions which have so enormously reduced the burden of increasing toil to secure the necessities of civilized existence which was the lot of both men and women from the earliest ages.

It is unfortunate that there has been so much unwitting ignorance and so much deliberate misrepresentation of the economic history of the East India Company as to result in the general acceptance of an utterly false account of the effect of British rule on the indige-

nous industries of India. It is this false impression that is in a large measure responsible for the present reactionary movement in favour of hand spinning. As well attempt to dam the Ganges with a string of coolies carrying baskets of earth on their heads as stop the spinning of cotton by machinery. The *Charka* and *Khadder* cloth are in themselves only of importance as symbols of an intense reactionary movement headed by men incompetent to guide and careless of their country's future. Extinguish modern industrialism—establish *Swaraj*, revert to the conditions of the seventeenth century—and of necessity you must go back to the population of that time, for no more will the land then support. That is to say, two-thirds or two hundred millions are doomed to extinction if the effort succeeds. There was as Gibbon relates a similar decrease in the population of the Roman Empire in the fourth and fifth centuries when the barbarians from the north overran the fairest tracts of Southern Europe and the countries bordering on the Mediterranean.

If India desires to attain a higher political status—to become perhaps in the future a great world power—it will have to move forward not backward. It will have to call to its aid and to utilize the energies and skill of Western nations. It will have to welcome their experts and follow their guidance. Thus, and thus only, will it be able to attain the means whereby it can hold its own and exercise that influence in the world its numbers, its area and its historical past justify it in aspiring to.

Agriculture is the basic industry of India and upon its prosperity all others depend. It will be well, therefore, if the *intelligentsia* of the country can be got to realize this and turn their attention to the problems which the cultivation of the soil presents for solution. There are many who will agree with me, many who are already working in this direction and it may be well to raise some broad issues that may elicit discussion and result in a practical policy which will promote progress.

Since the beginning of the present century, these matters have received a great deal of attention from Government and no one can accuse the administrations, whether Imperial, or Provincial, of lack of interest. There is an Imperial Department of Agriculture and

each province has a local Department to deal with its own special aspect of the question. Without doubt a vast amount of work is being done and considerable efforts are made to popularize the valuable results which researches and experiments during the last twenty years have produced. Besides the continuous departmental work in progress, Commissions and Committees have been appointed to examine important aspects. There are valuable reports on Co-operative Credit, Cotton and Sugar, the work of special Committees appointed by the Government of India, whilst two important Commissions have studied cognate subjects.—Irrigation and Indian Industries. The Irrigation Commission's report has resulted in great works in the Punjab and the Bombay Deccan; but for various reasons, it has been comparatively infructuous elsewhere. The Indian Industrial Commission's report has brought into existence the Provincial Departments of Industries and in each Province they are very hard at work but so far with little influence on the industrial life of the country. To an outside observer, they seem to have no definite policy but perhaps time is required for that to emerge. One outstanding fact may be noted and that is the almost complete lack of any kind of co-ordination between the Departments of Agriculture and the Departments of Industries. Yet Industries and Agriculture are very closely allied and are under modern conditions and modern methods of working, mutually dependent on one another. So much so indeed that I am inclined to think that the Departments should be amalgamated or at least both in the Government of India and in the Provinces placed under a common head.

The unfavourable conditions under which Indian agriculture is carried on are well known and to remedy them is exceedingly difficult. Let me briefly enumerate some of them. The individual holdings are too small and many are of an uneconomic size—that is to say, they do not provide a sufficient return for the simple needs of a single family. The open field system is almost everywhere prevalent and militates against improvement of any kind. The ryot lacks capital and his indebtedness is proportionately very great. By instinct he is rightly extremely tenacious of ancient methods for he would be ruined if he attempted to depart from them and he has to be content with a precarious living from an infertile soil. Water for irrigation and manure to increase the fertility of his over-cropped land is what

he needs and he is well aware of it; but he has no money to sink wells and provide means to raise the water on to his land or to purchase manures. Even if fertilizers were within his reach, his time-honoured experience does not extend beyond the local resources which have always been at hand but which year by year are available in diminishing quantities. Too large a proportion of his cattle manure is converted into bratties for fuel, for nothing else can be obtained. The all too limited area which he cultivates is seldom in a single block but consists of small patches scattered all over the village. The actual cultivator is frequently the victim of a rapacious landlord for the pressure of population on the land is slowly increasing. Except in the irrigated tracts or where the land is protected by wells, agriculture is a gamble dependent on rainfall. To all these disadvantages may be added that he must conform to ruinously expensive social customs and that in every village there is a standing feud which prevents any united action. The picture is a gloomy one; yet, the ryot was still recently well content with his lot and strongly averse from seeking a livelihood by any other means than from his land.

Such being the conditions under which the average cultivator lives, we must not be too hasty in expecting a material improvement from the efforts that are being made by Government to improve them. It is desirable, however, to review the work of the Departments that should deal with rural development and if possible to ascertain whether or not the measures taken are likely in the long run to make any material impression on the agriculture of India. It may be conceded at once that the research work at Pusa, at Coimbatore and many other stations has yielded valuable results; but broadly it may be said the ryots manifest very little interest in them. Probably those who grow industrial crops for export are most influenced, especially the cotton growers. New and improved varieties of sugarcane and single seedlings in paddy transplantation have also caught on. The crucial problem for solution has been avoided. It is doubtful if the Government demonstration, as distinguished from experimental farms, can be made to pay on an absolutely commercial basis and so far as I know farming on the scale of the better class ryot has never been attempted and probably never will be. What seems to be necessary is the instruction of ryots on their own land with a guarantee against loss to overcome their initial scepticism. The agri-

cultural colleges seem to be of little use in this direction; they are filled with students — well-educated youths quite able to assimilate the instruction offered them — but when they leave, by far the great majority seek to become officials of some sort; on their ancestral lands they have no scope. There are exceptional cases; but it has yet to be demonstrated that even they have been able to influence their neighbours or have bettered their own position.

Turning to the Departments of Industries, except in Madras they have no developed organization to aid rural development and very little is being done to assist the minor industries which even now are in the aggregate of immense importance. India is poor and will remain poor till cattle and men as a source of motive power are replaced by energy more cheaply generated by heat engines. Water is still drawn from countless wells by bullocks and in some parts by men working lifts of the *denkli* or *picottah* type. Over more than two million acres sugarcane is crushed and about two-thirds of the available sucrose extracted by small iron roller mills worked by bullocks and in not a few tracts wooden mills are employed with an even smaller degree of efficiency. Paddy hulling, it is true, has been largely transformed to a power operation but the wooden oil mill worked by bullocks is still in use. A few steam ploughs and motor tractor ploughs may be seen but the way they are generally used scarcely encourages one to hope for a large increase in their numbers in the immediate future. The supply of hides and skins depends upon the mortality among the cattle and the prosperity or otherwise of the meat-eating castes. Formerly they were almost a waste product of agriculture; now they are a valuable source of income to the people, which could be greatly increased if more care was employed at every stage in all the processes they pass through from the time they are stripped off the carcass till they reach the market as finished or half-finished leather.

The greatest obstacle to industrial progress in India is competition, which makes it worth no one's while to do anything. Judiciously created monopolies would provide the inducements that are now lacking to attract enterprise. The tariff walls which are likely to be built round the country will to some extent relieve the pressure of outside competition; but the pressure of internal competition will then weigh all the more heavily. Rice hulling and cotton ginning have been overdone and

it is only lack of capital and the necessity for joint stock companies on a large scale that has saved India from being flooded with inferior cotton and jute mills. Without a patent or some kind of privilege or monopoly arising naturally or artificially created, the pioneer in India who after expenditure of energy and capital succeeds in some industrial venture is sure to find rivals setting up in opposition and with the advantage of no preliminary expenditure such as has had to incur. Generally they can undersell him and do not fail to do so. This was recognized in Madras in pre-war days and a good deal of pioneer work was undertaken by Government which has resulted in the creation of industries spread all over India, with an annual turnover running into many crores of rupees. Nevertheless, it must be admitted that only under very exceptional circumstances it is the proper function of Government to directly intervene in industrial work or attempt to run manufacturing concerns. Of such exceptional cases the Forest Department Turpentine factory at Jalloo, the Mysore Sandalwood Oil distilleries and the Fish Curing and Canning works at Beypore are typical examples. There is little or no justification for Government soap factories, oil mills or iron works.

The main function of the Departments of Industries is not to act as intermediaries between the Government and the modern industrial and commercial enterprise in India; neither is it to undertake the administration of factory and labour laws or collect statistics and disseminate information. These may be conveniently tacked on but they should in no way interfere with the real work for which they were created, *viz.*, to foster individual enterprise on a small scale and assist indigenous industries to modify their methods and equip themselves with labour-saving devices so that they may produce more efficiently. Of all these industries, agriculture is the most important and the most in need of help not only from the agronomic side which is attended to by the Departments of Agriculture but also from the engineer's standpoint which is at present almost entirely neglected by the Departments of Industries and only to a very limited extent appreciated by the Departments of Agriculture if one may judge either from the staff appointed to deal with it or the time given to discussion of its problems at conferences.

What above all is wanted is a simple and reliable source of motive power to replace cattle. Such a motor must obviously be of

the internal combustion type and wherever possible the fuel for it should be of local origin. There are numerous types of oil and gas engines now to be purchased which more or less completely fulfil the requirements of the Indian user when his scale of operations enables him to profitably employ from 5 to 10 horse-power in a single unit; but there are comparatively few ryots so situated whilst there are hundreds of thousands who would find a smaller motor of two horse-power or great assistance. Of small oil engines, there are many on the market; but my experience with them is not altogether satisfactory and they work either on petrol or kerosine oil, which fuels, though easy to obtain, are now too expensive and it is doubtful if these motors can successfully compete with cattle power. The true line of development is with the suction gas producer and the gas engine. English firms are now working in this direction to produce a small fool-proof motor using charcoal as fuel. In many places, charcoal is cheap enough; but over the greater part of India any large demand would certainly enhance the price and probably exhaust the supplies. First and foremost then expensive plantations for fuel are required. In some places they already exist as on the East Coast both to the north and south of Madras, also in the Mysore State between Bangalore and the Kolar Gold Fields and in the Punjab. That they have proved exceedingly profitable to their owners is well known and it can hardly be doubted that all over India fuel plantations would be started if it was realized that, when they came to maturity, there would be a ready sale for the wood. It is impossible to expect landowners to see ten years ahead and in the first instance it is for Government to lead the way and devise means to start extensive fuel plantations at the lowest possible cost. It would be ideal if in every village there was a fuel plantation, administered and maintained by a village *panchayat* for the benefit of the village; but it is probably hopeless to expect much progress in this direction though a good deal could be done if the energies now expended in introducing the *charka* were devoted to providing the country with fuel and thus rendering it possible to dispense with the use of valuable cattle manure for that purpose. In a more effective way would such efforts tend to render India more self-contained and self-supporting. The advocates of the *charka* and *khaddar* cloth would do well to consider whether it would not be of greater benefit to

their motherland to enlist the people in a forward movement rather than indulge in a fantastic attempt to put the clock back to the eighteenth century. Food as well as clothing the people must have and increased fuel supplies will react on agriculture very much to its advantage. It should be a function of the Departments of Industries to create the organization necessary to encourage landowners to start fuel plantations; but it is almost certain that in most Provinces pioneer work will have to be undertaken and it need be on no niggardly scale for the certainty of a good return on the expenditure is assured.

A progressive policy for the Industrial Departments then would be to take steps to obtain a thoroughly satisfactory small motor for rural use and simultaneously set about securing that when it is found there shall be adequate supplies of a cheap and suitable fuel.

Given the motor, it will naturally follow that the Departments must be prepared to show for what purposes it can be employed and how funds can be raised to pay for it. Its great field will be to drive pumps, lifting water from wells and other sources of water-supply for irrigation. I do not know if any very recent statistical information has been published on the subject of well irrigation; but 20 years ago, the area watered by wells was estimated at 16 million acres and it is probably now considerably larger. If each acre of land receives only 12 inches of water and if the water is raised 20 feet, further if the irrigation season extends over 180 days and the working hours of the cattle are 5 per day, animal energy must be expanded at the rate of nearly one million horse-power. This calculation is only of value as indicating the order of magnitude of the mechanical work performed in lifting water, from which may be deduced that there is a vast field for the small motor.

Next comes the machine to be drawn by the small motor to lift the water. Of pumps there are innumerable types and when the quantity of water to be lifted is large, there is no difficulty about selecting one. But the average well in India yields only a small volume of water and probably not more than 20 per cent of existing wells yield enough water to be considered suitable for motor-driven pumps. Two thousand gallons per hour is about the minimum that we can conveniently deal with and for such an output a number of pumps will have to be designed and tested to suit the local conditions that occur. This will

provide much work as the tests must be made on the field under strictly practical conditions.

Following on this preliminary work comes the actual installation of pumping plants for the ryots. Every case has to be examined and a suitably arranged combination designed. The capacity of the well to yield water is an essential piece of information that must be obtained and it must be definitely ascertained where the fuel supply is to come from. If thousands of wells are to be provided with pumps, it is obvious that the Departments of Industries will have to maintain a large staff of competent engineers and mechanics. The organization required is described in the report of the Indian Industrial Commission and those interested in details may be referred to the chapter on the Provincial Departments of Industries as also to the earlier chapter on Industries and Agriculture.

After irrigation undoubtedly the widest field for the use of a small motor is in connection with sugarcane crushing. It is terribly hard work on cattle and to ease the burden the rollers are often set too wide apart and much of the sugar that should be extracted is left in the bagasse. If the Indian sugar crops were harvested and converted into sugar with the same efficiency as is obtained in Java or Hawaii, there would be no necessity to import sugar and the import trade would be decreased by 24 crores a year. The introduction of power-driven mills on a large scale, is, therefore, of prime importance and it matters not which Department is responsible for the work so long as it is done. There are a fair number of medium-sized mills already at work; but many of them are not run properly and as yet the small plant suitable for areas of from 10 to 20 acres has not been tried. Here, there is little or no preliminary experimental work required. In the United Provinces, there is at least one large private establishment that makes a business of lending out iron sugar mills to ryots for the season. Its operations are very successful. Something similar with power-driven mills might well be attempted in the sugar areas and if private enterprise is not at the outset forthcoming the initial attempt should be made by the local Department of Industries. In other countries, the hiring out of machinery and plant in charge of trained operators is very common and it is time that the system was introduced into India. Here it will be no great innovation amongst sugar-cane growers as, in some parts of the country, mills are already the subject

of hire still more frequently boiling down pans, whilst in other parts the professional *gur* boiler goes round the country and takes up contracts to mill the cane and turn it into *gur* or jaggery.

For grinding wheat to *ata* and preparing meals from other food grains, there is scope for small motor as also on oil milling, threshing and chaff cutting whilst in addition to work directly connected with the preparation of agricultural products for the market, there is a wide miscellaneous field for its application.

In America, in England, and, in a lesser degree, in continental countries, agricultural engineering has developed into a very important business and in India the extensive introduction of mechanical appliances into agriculture will call for repair establishments analogous to the small country engineering shops which are to be found scattered over England and which are now becoming of greater importance as motor tillage and harvesting and mechanical transport are making headway. Behind these general shops are the great manufacturing engineering concerns whose names are familiar all the world over. They do a little business in India; very little, however, compared with the area under cultivation. In the immediate future, they may do more; but it may be accepted as almost axiomatic that the application of mechanical engineering to Indian agriculture will be no great matter till works are established out here to cater for our 'Basic Industry'. Indian agriculture is big enough to support a great engineering industry and it will be well that this should be recognized at the outset. There is some foundation for these statements in the fact that, during the ten years preceding the war fully 1,500 motor-driven installations were set up in the south of India, all connected with agriculture or planting. Hitherto, the Indian has not taken kindly to mechanical engineering and it remains to be seen whether the schemes now incubating in several Provinces will effect any material change in their attitude.

I am not under-estimating the difficulties which must be solved if success is to be achieved along the lines I have indicated. The small scale on which the ryot works can be overcome by co-operative working; but it will be a long and toilsome task to get round the ingrained suspicion of one another that characterizes the people of India. Probably, the small *entrepreneur* working for himself and for his neighbours on some kind of hire system will be the initial line of least resistance. I could cite instances on which a number of ryots

have combined to buy an engine and pump for their joint use, also instances in which the owner of a similar outfit has sold the water he raised from a well to his neighbours. Personally, I am convinced that India cannot make progress unless by improvement of her "basic" industry and that whatever results the agricultural departments as at present constituted may achieve, they will be incomplete without cordial and closely associated work by the Department of Industries.

I have left the discussion of the question as to how capital for these new developments is to be provided to the last, because it was first necessary to show what field there was for its employment and what prospects there were of a remunerative return. Ultimately, as is stated in the Indian Industrial Commission's report, hundreds of crores of rupees may be required; but as the demand grows, it will become easier to supply it. Confidence will then have been created and where confidence or credit exists, there money will flow readily enough. In Madras before the war, and in Mysore during the first half of the war period, it was found that capital was much more freely forthcoming than had been anticipated and that, if private resources were assisted by taccavi loans or by a suitably devised system of hire purchase, a great deal was possible. Both methods of financing the land-owner were examined by the Industrial Commission and the application of either was recommended as the circumstances of the applicant for assistance might determine. Such loans or hire purchase agreements should have no long period of currency — five years at the outside. The profits that accrue where machinery is suitably applied to agricultural work are very considerable and it is essential that they should be first employed to replace the original capital outlay. The Co-operative Credit Societies have so far met with very little success where they have attempted to do more than finance the normal requirements of the agriculturist. The blind cannot lead the blind and it will be only when the Departments of Industries have led the way and created throughout the country a demand for motive power that men will gradually emerge with sufficient mechanical knowledge to control or advise co-operative societies that may be formed to provide finance for the introduction of machinery.

There are not a few tracts favourably situated for experiments in such methods of

co-operative enterprise; but at the outset, they are hardly likely to be successful unless they are carefully nursed by experienced officers such as the Departments of Industries should, but do not, possess. It is useless to think that at present any kind of banking system can be established that would relieve the State of the burden of providing funds. Much experimental and demonstration work has to be done before confidence will be created in the possibilities of the application of power to rural needs. A long stride in this direction was made in the south of India; but the doctrinaire attitude of Lord Morley combined with the unavoidable dislocation consequent upon the paramount claims of the Munitions Board upon all local industrial organizations caused a serious set back from which the abnormally high prices for machinery and plant since the armistice has rendered recovery very slow. Now that prices are more reasonable, it is time that a new advance was made.

In this article I have confined myself to the part which the Departments of Industries can and should play in promoting agriculture. It is undoubtedly the most urgent and most important work they should be engaged upon; but there is also much to be done for the non-agricultural indigenous industries and there are not a few gaps in the industrial equipment of India that should receive their earnest attention.

The Government of India have now received a large number of opinions on the question of workmen's compensation and hope to be in a position to introduce a Bill on the question in the September Session of the Imperial Legislature. The subject is a highly technical one and while there is a fairly general unanimity on the advisability of legislation, the numerous opinions received reveal considerable differences on important matters of detail. The Government of India have some hope that it will be possible to convene a Committee on which the different interests will be represented, to prepare proposals which will command the support of all sections of the Community. They have, therefore, invited the co-operation of a number of gentlemen, who are, for the most part members of the Imperial Legislature, in forming a Committee on the question. The composition of the Committee will be announced later. It will meet in Simla on June 20. The Hon'ble Mr. Innes will act as Chairman of the Committee.

Agriculture in the Central Provinces, 1920-21.

By "Rusticus."

It is very refreshing to turn from the Agricultural Report for Bihar and Orissa to that for the Central Provinces. In a year in which the agricultural conditions were the worst experienced by the Provinces this century, their Agricultural Department distributed through 62 agricultural unions and 1,392 farms, all but eleven of which were private ones, no less than 12,029 maunds of wheat seed, 3,212 maunds of paddy seed, 2,77,683 maunds of cotton seed, over 1½ million sets of sugarcane and 1,477 maunds of miscellaneous seeds. It sold implements to the value of Rs. 62,765 and books and bulletins to that of Rs. 2,280. For the implements it hired out, it received Rs. 3,103. And all this in a year when the monsoon was a complete failure that the outturn of cotton on the Government farm at Akola was only 55 pounds of uncleaned cotton against 738 pounds in the previous year and juar (jonna) which yielded 1,600 pounds of grain in 1919 was not worth harvesting at all.

Dr. Clouston, to whom we would offer our congratulations on the conferment of the degree of Doctor of Science by the Scottish University of which he is such a distinguished alumnus, is evidently a reader of these columns, for to his report is attached the map for the addition of which to all agricultural reports we have long been pressing. In every respect it fulfils the requirements we have laid down. It shows the division of the Provinces into agricultural circles as well as the location of the Government experimental farms, the seed farms and demonstration centres. The chief crop grown in each circle is indicated by a distinctive colour, subsidiary crops being shown by crosshatching. The reader of the Report is thus enabled to see at a glance that the Southern Circle—somewhat misnamed as it includes the whole of the eastern part of the Provinces—is almost entirely rice-growing, that cotton is far the most important crop in the Western Circle, though an appreciable area of rice and wheat are grown in the north of it and that the chief crops grown in the Northern Circle are wheat and the lesser millets, though there is a small rice-growing tract round Damoh. He will also see at once from the map that the Agricultural Department is less active in the east of the Provinces than in the west and north, a circumstance which is readily explained by the fact that the Feudatory States in the Central Provinces are all to be found in the east.

We have only one criticism to make of the map and that is a very minor one. We would suggest that it should be bound into the Report with its face instead of its back to the letterpress. The reader would then be able to have it open before him throughout his perusal of the Report instead of having to close the Report before turning back to it.

It will be obvious from the last paragraph that cotton, wheat and rice are the chief crops of the Central Provinces. The history of the spread of roseum cotton, a hardy and prolific variety, with lint of exceptionally white in colour and with a high proportion of lint to seed, but with a very short staple, has frequently been referred to in these columns. The Indian Cotton Committee, whilst admitting the advantages of roseum from the point of view of the cultivators' pockets, did not regard its spread with any great enthusiasm, especially as they thought that the war might bring about a change in the conditions which had made the Continent of Europe the principal market for it, where it was used for mixing with wool. They, therefore, recommended that the Agricultural Department should endeavour to evolve a superior variety of indigenous cotton of sufficiently high yield and ginning percentage (percentage of lint to lint and seed combined) to enable it to compete successfully with roseum. Dr. Clouston says that single plant selections of indigenous cottons of medium staple are being made in the hope of achieving the objects aimed at by the Cotton Committee and we are glad to see that, though he regards the task as formidable, he does not consider it hopeless. This selection work was all the work that could be done on cotton last year, as the drought rendered such results as were obtained on the cotton farm at Akola of no value. Rice and wheat fared rather better than cotton. The list of varieties of late and medium rice which yielded over 2,000 pounds of grain to the acre on the Raipur farm is quite a long one whilst one early variety, bhata gurnatia, gave over 1,900 pounds. The selected strains gave increases of 400 to 450 pounds to the acre over the best local varieties. At Sindewahi, bhundu and parewa varieties which were also especially promising

at Raipur, headed the list and are being multiplied on private farms for distribution. The failure of the rains and consequent shortage of water in the irrigation sources was, of course, a very serious handicap to multiplication and also, owing to the insufficiency of water for puddling the plots, to the system of transplanting paddy which has gained great ground in the Central Provinces in recent years, as indeed it ought, for the experiments carried out to test the difference in the outturn of fields in which paddy is sown broadcast and of those in which it is transplanted show a difference of 512 pounds to the acre in favour of transplantation. It is not surprising, therefore, that many landholders are transplanting areas of considerable size and that progress would be even more rapid were it not for the peculiar system of scattered holdings which exists in the great rice-growing tracts of the Provinces. The Department has a number of selected strains of wheat of the AO series which, if we mistake not, it has evolved itself and these seem even more superior to the local wheats and even better suited to the local conditions than any of the Pusa wheats.

Though there are few parts of India in which better sugarcane can be grown than the Central Provinces, the area now under cane is only about a quarter what it was sixty years ago. The work on the experimental farm at Jubbulpore shows the yields which could be obtained if only the crux of the difficulty, the provision of better irrigation facilities could be surmounted. At Jubbulpore, Gillman's Red Sport, a Mauritius variety, gave a yield of $4\frac{1}{2}$ tons of gur to the acre whilst, at Sindewahi, Khari, a thin cane introduced by the Department from Bengal, gave a yield of nearly two tons of gur to the acre against the provincial average of 1.15 tons. But it cannot be said that the Local Government have shown cane-growing any encouragement. Their policy has, in fact, been definitely to discourage any extension of cane-growing under Government irrigation works until a large proportion of the area under food crops has been secured against famine. The only hope for an increase in the area under cane lies, therefore, according to the Indian Sugar Committee, in a well-sinking campaign and it is encouraging to find that the recently appointed Agricultural Engineer is receiving many requests for assistance from people who are desirous of increasing the water-holding capacity of their wells by boring and of using centrifugal pumps for irrigation.

It is worthy of mention that several of the Coimbatore seedlings have shown great promise on the experimental farm at Tharsa.

The newly arrived Assistant Directors of Agriculture received a much warmer welcome in the Central Provinces than they did in the adjacent province of Bihar and Orissa. They were fitted into the organization of the Department immediately and advantage is being taken of their presence as well as of the appointment of Extra Assistant Directors to relieve the Deputy Directors of propaganda and routine work in order to enable them to devote more time to research and experiment, for it is realized that progress in experiment and research must precede any further advance in agricultural practice. It is intended that the Extra Assistant Directors should take over an ever increasing share of the responsibilities connected with the control of seed and demonstration farms, private seed farms and similar activities, and that it is they who should be the propagandists who will, by organization and demonstration, bring the fruits of research and experiment within easy reach of the cultivators. This is work for which their knowledge of the vernaculars and their close acquaintance with the lives of the people specially fits them. We have already mentioned that the Central Provinces have 1,392 farms, only eleven of which, it would appear from the Report, are Government farms. That so many private farms exist is eloquent testimony of the extent to which the work of the Agricultural Department is bound up with the agricultural economy of the Central Provinces and there is no part of India which possesses a more complete organization for spreading agricultural improvements, whether it be by the introduction of improved varieties or by that of improved implements or practices, more speedily and effectively. The Co-operative Department is doing its best to help. In the Sihora tahsil, co-operative credit societies have taken up the work of propagating the improved varieties of wheat supplied by the Department; 32 of them have already been organized to this end and are being financed by the Sihora Central Bank, their members being given seed on the siwai system which means, we believe, that the Bank and the members take equal shares of the outturn. An experienced agricultural assistant has been posted to Sihora in order that the societies may have all the help they need on the agricultural side.

The Nagpur Agricultural College which,

it may be noted in passing, has four years' course, had a somewhat chequered year. Work was considerably hampered by the activities of non-co-operators and seventeen of the students left the College to join their ranks. In the circumstances, the results obtained at the annual examinations must be regarded as distinctly good. The Provinces have two Agricultural Middle Schools at Chandkuri and Powarkhera in which general education is combined with training in agriculture, the presumed vocation in life of the students admitted to them. But in the Central Provinces, as elsewhere in India, except perhaps in the United Provinces and the Punjab, there is at present very little demand for agricultural education for its own sake and Dr. Clouston has to admit that the schools are not really popular because none of their students are

taken into Government service and there are no Government scholarships. The Chandkuri school has, it is true, its full complement of 32 boys but this is mainly due to the personal influence of Rai Saheb Tundilal Powar, the local Extra Assistant Director of Agriculture. The Powarkhera school, on the other hand, has never been able to secure more than 19 boys. Dr. Clouston is doubtful of the wisdom of trying to graft vocational training on to general education and thinks the better plan would be to establish purely vocational schools for boys who have already completed their general education. As we have recently said, the question is one which can only be decided by a committee of experts and it would be well if such a committee were appointed at an early date to throw light on this and other vexed questions of agricultural education.

Hydrogenation of Oils in Japan.

The hardening of fish and vegetable oils by hydrogenation is a comparatively recent industry in Japan, having been started in 1912, with one factory under foreign management. Originally the industry was intended to furnish hardened oils for soap-making, but owing to recent developments there is now a small surplus for export. The extent of the trade may be estimated by the fact that in 1918 hardened oil amounting to 788,673 pounds, valued at about £12,000, was exported, but in 1919 and 1920 the exports evidently were smaller, as hardened oil was not listed as a separate item in the customs returns for those years.

According to a report by the United States Vice-Consul at Kobe, there are now eight plants in Japan manufacturing hardened oil by the hydrogenation process, with a combined capacity of 62 tons per day. The raw materials used by most of these plants are whale and fish oils, although a few also harden vegetable oils (principally coconut and soya bean), or fish and vegetable oils mixed. Some of the plants obtain their hydrogen used by the decomposition of water by electrolysis, which can be done profitably in Japan, where electric current developed by hydro-electric plants is plentiful and reasonably cheap. Others use hydrogen obtained as a by-product from the manufacture of caustic soda, or by the action of acids upon metals. The processes employed in most of the factories are not made public, but it is known that one concern uses a Japanese patent similar to the German Wilbuschwitch patent,

and another has the sole right to the Ellis patents in Japan.

The Japanese soap industry, which furnishes the principal market for the hardened oil, has tripled in size during the past ten years, and in 1919 the output amounted to some £3,000,000. This quantity not only supplies domestic needs but leaves a surplus valued at about £400,000 for export. In 1920, 2,000,704 dozen cakes of toilet soaps and 6,928,380 pounds of laundry soaps were exported, principally to China, India, and Dutch East Indies and other parts of the Far East.

The hardened oil industry has developed with and is dependent upon the soap industry for its prosperity. As a result of the severe trade depression, consequent upon deflated prices and the break-down of foreign trade, the market for soap has decreased considerably, with a corresponding decrease in the home demand for hardened oil. At the same time the market abroad, which formerly absorbed the small surplus, has practically disappeared. Consequently producers of hardened oil in Japan have had a bad period, although most of them are still operating. No improvement can be expected in the industry until trade conditions in general, and the oil and soap markets in particular, show indications of settling down. The hardened oil industry in Japan, adds the Vice-Consul, should develop considerably in the future, as Japan has abundant supplies of fish and vegetable oils and a steady market at home for part of the output.

The British Budget.

On the whole the British Budget has been well received, though, as is usually the case, everyone is not in agreement with the Government. One school is dissatisfied because the Treasury have not found it possible to give greater relief to the tax-payer, the other is doubtful whether the measure of relief afforded was not greater than warranted having regard not only to the position existing to-day but to conditions which may be expected to arise in the next financial year. On one point all should be in agreement, and that is that relief of taxation should be effected only by reducing expenditure below revenue.

The decision of the Government to suspend the operation of the various sinking funds and thus to create a surplus for the reduction of taxation has been criticised by those who maintain that in so doing the Chancellor has disregarded the canons of sound finance. There is something to be said for this view, more particularly if the expedient was adopted solely as a means of meeting the popular demand for reduced taxation. It may be that the estimates of expenditure will prove exaggerated and that revenue will be more productive than anticipated in which case there will be an actual surplus to replace the loss to the Exchequer arising from the tax remissions, and a sinking fund will then be provided out of revenue. On the other hand, and this is more likely, ordinary and special receipts may not come up to expectation and expenditure may exceed estimates in which case there will be no alternative but to meet the resulting deficiency by fresh borrowing, a contingency which must have presented itself to the minds of the Treasury when the Budget was framed. With estimates of this magnitude and with our experience of supplementary estimates in the last three years it is impossible not to feel that a Budget which leaves no margin between revenue and expenditure is bound to lead to fresh borrowing.

The fact that the requirements of this year only were considered, without any apparent regard for the deficiency which must arise next year on the present basis of taxation, is of importance in so far as it may be taken as indicative of a change in financial policy. The policy of deflation has been definitely abandoned. It is too early yet to form an opinion, but it may be that a period of inflation is ahead of us.

The position of the national finances, as

indicated by Sir Robert Horne on May 1 and supplemented by other information, may be summarized briefly as follows:—

FINANCIAL YEAR 1921-22.

Owing to disturbed conditions, falling prices, and the failure of the excess profits duty, actual revenue was £1,124,880,000, or £91,770,000 less than estimated. Expenditure amounted to £1,079,187,000, or £57,541,000 less than last year's Budget figure, and the amount available for debt redemption was thus £45,693,000. Practically the whole of the surplus thus indicated accrued from a payment of £44,500,000 by Germany in respect of the army of occupation for which no account had been taken in the Budget estimate of revenue. The actual amount applied to reduction of debt during the year was £88,466,000.

NATIONAL DEBT.

The maximum reached by the dead-weight National Debt was £7,998,000,000 on December 31, 1919. By March 31, 1921, this figure had been reduced to £7,574,358,000 and on the corresponding date of this year the debt was £7,654,500,000, the increase in the normal amount being due to the issue of the 3½% Conversion Loan at a substantial discount.

The amount of the dead-weight debt at various dates is shown in the statement below:

Gross Dead-weight Debt (000 omitted.)

	External Debt*	Internal Debt	Total
	£	£	£
1914, March 31 ..	—	651,270	651,270
1915	—	—	1,108,817
1916	—	—	2,140,749
1917	—	—	4,011,446
1918	—	—	5,871,851
1919	1,364,850	6,070,099	7,434,949
1919, Dec. 31 ..	—	—	7,998,000
1920, March 31 ..	1,278,714	6,550,065	7,828,779
1921	1,161,563	6,412,795	7,574,358
1922	1,090,184	6,564,316	7,654,500

* At par exchange.

EXPENDITURE 1922-23.

Including £25,000,000 for one half-year's interest on debt owing to the United States Government but excluding any provision for redemption other than for terminable annuities, the debt service is taken at £335,000,000. Other charges bring the estimated total on consolidated fund account to £363,438,000. Supply services, including ordinary and special expenditure, are expected to amount to £521,631,000 and £25,000,000 is allowed for

contingencies, thus raising anticipated supply expenditure to £546,631,000, and total expenditure to £910,069,000, of which £61,223,000 is for special services.

In the appended table will be found a comparison of the estimates for 1922-23 with the actual figures for last year and 1913-14 :

Expenditure (000 omitted)

	1913-14 £	1921-22 £	1922-23* £
National Debt Service	24,500	332,294	335,000
Northern Ireland ..	—	1,104	2,500
Road Fund ..	1,395	10,795	10,000
Local Taxation Accounts	9,734	11,172	9,788
Land Settlement ..	—	2,647	3,500
Other consolidated Fund charges ..	1,694	1,868	2,650
Consolidated Fund Services ..	37,323	359,880	363,438
Army	28,346	95,110	62,300
Navy	48,833	80,770	64,884
Air Force ..	—	13,560	10,895
Middle East ..	—	—	10,363
Civil Services ..	53,901	449,700	307,092
Customs and Excise and Inland Rev. Depts.	4,483	14,190	12,275
Post Office Services	24,607	65,977	53,822
Provision for Supplementary Estimates	—	—	25,000
Supply Services..	160,170	719,307	546,631
Total Expenditure	197,493	1,079,187	910,069
* Budget Estimate.			

REVENUE 1922-23.

On the basis of taxation in 1921-22 it is stated that revenue would bring in £956,625,000 yielding a surplus of £46,556,000. The proposed alterations in taxation and postal rates, however, reduce this surplus by £45,850,000, leaving revenue for the year at £910,775,000, or £706,000 more than the anticipated expenditure.

The amounts estimated to be received from the different revenue sources during the current financial year are shown below and are compared with actual receipts in 1913-14 and 1921-22 and with the amounts which would be received this year on last year's basis of taxation :

Revenue (000 omitted)

	1913-14 Actual £	1921-22 Actual £	1922-23* On last year's basis of taxation £	Budget estimate £
Customs ..	35,450	130,052	117,250	112,250
Excise ..	39,590	194,291	160,750	160,750

	£	£	£	£
Motor vehicle Duties ..	—	11,096	10,600	10,600
Estate, etc., duties	27,359	52,191	48,000	48,000
Stamps ..	9,966	19,638	18,250	18,250
Land Tax and House Duty	2,700	2,590	3,000	3,000
Income-tax and Super-tax ..	47,964	398,887	362,200	329,000
Excise Profits Duty ..	—	30,452	29,800	27,800
Corporation Profits Tax ..	—	17,516	19,750	19,750

Receipts from Taxes ..	163,029	856,713	769,600	729,400
Postal Service	21,190	40,000	40,517	35,667
Telegraph service	3,080	5,900	5,230	5,230
Telephone service	6,530	10,500	14,528	13,728
Crown Lands ..	530	820	750	750
Receipts from Sundry Loans	1,580	13,807	14,000	14,000
Miscellaneous :—				
Ordinary receipts	2,304	26,334	22,000	22,000
Special receipts	—	170,806	90,000	90,000

Non-tax revenue	35,214	268,167	187,025	181,375
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Total revenue..	198,243	1,124,880	956,625	910,775
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* Budget estimate.

The estimated position as regards revenue and expenditure in the current financial year is as follows :—

(000 omitted.)

	Ordinary £	Special £	Total £
Revenue ..	820,775	90,000	910,775
Expenditure ..	823,846	61,223	910,069
“ Supplementary	25,000	—	910,069
Deficit ..	28,071	—	—
Surplus ..	—	28,777	706

Without raising the question of the propriety of utilizing a surplus on special account to offset a deficiency on ordinary account, it should be pointed out that the estimated surplus of £706,000 has been obtained only by suspending the new sinking fund and by otherwise diminishing the charge on revenue. The Chancellor estimates that the sums which would ordinarily be appropriated for these purposes will amount in the current financial year to between 30 and 35 millions.

PROPOSED REVISIONS IN TAXATION.

Tea.—It is proposed to reduce the duty on foreign tea from 1*d.* to 8*d.* per lb. and on tea grown in the Empire from 10*s.* to 6½*d.* per lb. Ninety per cent. of the tea consumed in this country comes from the British Empire. These revisions will be effective as from May 15 and are estimated to cost £4,800,000 in a full year.

Coffee, Cocoa and Chicory.—The duties are likewise reduced by one-third. These revisions will be effective as from May 15 with the exception of the reduction in the duty on imported cocoa preparations for which the date is July 1. The cost to the Exchequer is estimated at £657,000 in a full year.

Postal rates and Telephone Charges.—The postage rates for inland letters, postcards and printed papers and letters to Dominions and the United States are being reduced at the end of May. Telephone charges are also being decreased. The cost of these concessions is £6,250,000 in 1922-23 and £7,400,000 in a full year.

Excess Profits Duty.—Owing to the depressed condition of trade and the difficulty of collecting arrears it is proposed to spread payment over a period of five years from January 1 last, and as from that date to charge interest at the net rate of 5 per cent per annum, without allowance for income-tax, upon all excess profits duty due for payment.

It is also proposed to amend the law in regard to the right of recovery of duty in certain cases where a change of ownership of a private trade or business has occurred through gift or bequest.

Particulars are given below of the unpaid arrears of excess profits duty:

	£ millions
Unpaid arrears March 31, 1921 ..	287

Assessed during 1921-22 ..	131
Total sum payable	418
Gross collections 1921-22 (of which Repayments were 92 millions) ..	122

Unpaid arrears March 31, 1922 ..	296
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Most of the arrears are subject to adjustment on appeal or otherwise.

Income-tax.—It is proposed to reduce the standard rate from 6s. to 5s. in the £, that is, by one-sixth. The loss of revenue will be £32,500,000 in 1922-23 and £52,000,000 in a full year.

In addition it is proposed to grant certain concessions to occupiers of land. The basis of assessment for farmers is to be reduced from twice the annual value of the lands occupied to the single annual value, and in the case of non-agricultural land from the single annual value to one-third of the annual value.

An important change is announced as regards the assessment of employees, all of whom will now come within Schedule E and be assessed in respect of current income.

Income falling within case III of Schedule D, i.e., interest on certain Government war securities, Treasury Bills, bank deposits, profits from discounts and some minor items, is to be made assessable for the first year of receipt on the basis of the amount of the income for that year.

State Saw Mills in Sweden.

A plan is seriously entertained by the Government to establish saw mills for the exploitation of the State forests in the north.

Hitherto the products of these forests have been sold by public auction to private timber working enterprises, but only small portions of the State timber, etc., have thus been disposed of. Vast areas have remained uncut. The Government project aims at bringing these into regular exploitation by establishing mills and factories within easy reach.

A Technical Commission that has been studying the subject has now sent in its report, which is, on the whole, favourable to the enterprise.

If it is carried out it will naturally tend to increase the timber production of the country. This aspect of the matter inspired two members of the Commission to add a rider to the report recommending that the State competition thus brought into the trade should not be allowed

to disturb the regular developments of the timber market, and injure private enterprise.

ACTIVE TIMBER INDUSTRY.

Despite the fact that no general agreement has yet been reached between the Industrial Federations and the trade unions, work in most industries is being resumed almost on a normal footing.

This is especially the case in the timber trade. Reports from the timber districts, notably Sundsvall, state that work in the saw mills and pulp factories is proceeding almost normally. Workmen have agreed to the necessary cuts in their wages, while the millowners are endeavouring to reduce general expenses. The winter is unusually severe, and the prospects of an early opening of navigation are small, yet the expectations of the coming timber season are hopeful. Prices continue firm, and the market in general is more cheerful.

The All-India Industrial Welfare Conference, 1922.

By G. M. Broughton.

This Conference, the first of its kind to be held in India, was organized by the Currimbhoy Ebrahim and the Tata Sons Workmen's Institutes of the Social Service League, Bombay, and was held in Bombay on the 6th, 7th and 8th April. About 50 representatives from different parts of India were present, the Government of India and six local Governments sending 20 delegates. Men and women actually engaged in welfare work in connection with factories, such as the Buckingham and Carnatic Mills, Madras, Empress Mills, Nagpur, British India Corporation, Cawnpore, also attended. Social organizations such as the Young Men's Christian Association, Young Women's Christian Association and Servants of India Society were also represented, together with organizers of infant welfare work and members of Co-operative Societies.

Mr. Chatterjee,* Secretary in the Department of Industries, was unanimously elected President. On taking the chair he found himself confronted with about 25 papers dealing with such heterogeneous subjects as infant welfare and the prevention of hook worm. The papers that had been prepared were first divided into two main groups, those dealing with work inside the factory and those with activities outside the factory. The Conference then split up into two Committees to deal with each of these groups, Mr. Mehta, Director of Industries, being elected Chairman of the former and Mr. Deodhar, Chairman of the latter. Writers of each of the papers were asked to state their views briefly and to summarize them in the form of a resolution to be submitted to the General Conference.

The subjects connected with inside factory welfare work related to sanitation and hygiene, works committees and the duties of welfare workers. Recommendations were passed on all of them. Questions of sanitation and hygiene, it was suggested, should be dealt with by Sanitary Officers of Government who should be invested *ex-officio* with the powers of factory inspectors. The suggestion was also made that all factories should be required

to maintain first aid appliances and that employers should be encouraged to keep records of sickness among their workers. The recommendation on works committees was, as one delegate sagely remarked, sufficiently vague. Their establishment in factories was recommended, while at the same time the necessity of securing properly elected representatives of workers to serve on such committees was pointed out. As welfare workers *inside* the factories are practically non-existent in India, the Conference recommended that a start should be made by asking social service organizations to take up the training of welfare workers in co-operation with employers of labour and Universities.

Welfare work outside the factory embraced a larger range of subjects:—education, child-welfare, trade unionism, the spread of the co-operative movement and housing. The need of education was emphasized by urging that the Government, employers of labour and the public should be asked to co-operate to establish day schools, continuation classes and night schools in mill areas. Another resolution recommended the spread of the co-operative movement among factory workers. Infant welfare work was dealt with in a somewhat vague recommendation. The great need of the provision of suitable housing for industrial workers was summarized in a businesslike resolution urging the formation of co-operative housing societies for skilled workmen and recommending that, in the case of unskilled workmen the Government, local authorities and employers should take immediate steps for the provision of suitable quarters sufficient for the number employed in that area. Two more recommendations, one relating to welfare work and trade unionism, the other to temperance brought the sittings to a close.

The immediate practical outcome of the Conference was the initiation of a central organization for the promotion of welfare work. When completed the central organization will establish a permanent office for the collection and dissemination of information about welfare work. An executive committee will also be appointed to carry out the decisions of the Conference, to supervise the work of the office and to draw up the agenda for each

* His presidential address is published elsewhere in this issue. [ED.—M.E.J.]

conference. Further it is proposed that there should be an annual General Conference consisting of (1) those who are actually doing welfare work; (2) representatives of organizations giving financial support to welfare activities; (3) representatives of Government departments concerned with the welfare of labour.

Those interested in the subjects discussed should be able to obtain the papers from the Secretary at the Bombay Workmen's Institute, Elphinstone Road, Parel, Bombay. A complete report embodying all the resolutions will undoubtedly be printed in due course.

Resolutions passed at the Conference.

SANITATION AND HYGIENE.

(1) The general sense of the Sub-Committee is that Managers will find it useful to maintain records of sickness and other causes of absence specially in cases where mill-hands live in quarters either belonging to the factory or in close proximity to the factory.

(2) It is desirable that the sanitary officers of Government should also be invested ex-officio with the powers of factory inspectors in order to enable them to investigate questions of health and sanitation inside the factories. It is also desirable that such sanitary officers should begin the investigation of causes and incidence of sickness in industrial areas and specially among factory workers. But they should issue no executive orders except with the approval of the regular factory inspection Department.

(3) A recommendation be made to the Universities to include occupational diseases and industrial hygiene as a post-graduate study.

(4) It is suggested that in the rules framed under the Factories Act, all factories should be made to maintain first-aid appliances in the charge of the qualified persons and that in factories of a small size some of the employees should be trained for the use of first-aid appliances.

TRAINING OF WELFARE WORKERS.

It is the opinion of the Conference that social service organizations be asked to take up the work of training welfare workers and that Universities and employers of labour be asked to co-operate with these agencies.

WORKS COMMITTEES.

This Conference is of opinion that works committees be established in all industrial establishments, and the functions of these committees be gradually widened. It is also the opinion of the Committee that the representatives of workers on these committees be appointed by some system of election by the workers.

EDUCATION OF THE WORKING CLASSES.

(a) With a view to secure better efficiency of working men, women and children, this Conference urges the spread of education in suitable ways among these classes as a prime need of industrial employment and for that purpose recommends the establishment in mill areas of day schools, continuation classes, and night schools for imparting industrial or technical instruction and general culture with the object of widening their outlook and rendering the workmen better workers, more intelligent factors in the country's industrial organization and more intelligent and

capable citizens; in order to bring about such educational facilities, this Conference calls upon the great employers of labour severally or jointly, the Government and the generous public to co-operate in this respect.

(b) In order to secure the proper development of the aptitude and the capacity of the children employed, this Conference considers that Superintendents of welfare work should devote special attention to this aspect of the question.

(c) The Conference is of opinion that in this connection the separate needs of half-timers, adult workers and the unemployed children of the mill population should be borne in mind as also the separate needs of boys and girls or men and women.

CO-OPERATION AMONG FACTORY WORKERS.

1. This Conference recognizes the necessity of an intensive propaganda for the promotion and success of co-operation among the working men in the industrial areas and for this purpose, while appreciating the response made so far, urges employers of labour to contribute liberally to central co-operative or social work institutes existing in their respective localities.

2. This Conference recommends that mill-hands' societies should be organized preferably on locality basis rather than separately for each mill.

3. This Conference recommends that co-operative organizations should devote greater attention than at present to the encouragement of thrift, for example by introducing the system of regular monthly subscriptions and Savings Banks where possible.

4. This Conference recommends that the efforts of welfare workers outside the factories should be directed largely to the establishment of co-operative hostels, boarding houses and stores as supplying the primary needs of a good home and good food for all workers.

MATERNITY AND INFANT WELFARE.

1. This Conference is of opinion that the foundation of all Medical Welfare Work depends upon an efficient Midwifery service and the education of the mother, and that the best means to secure these objects should be considered by local committees consisting of medical and social workers with knowledge of local conditions, and that the recommendations of such committees should be submitted to the employers. The question of maternity clinics and homes must follow and should be arranged for according to the financial support given to the entire scheme by the various agencies already at work and by the employers. Creches should be provided in every factory employing women.

HOUSING.

This Conference wishes to emphasize the great need for the provision of suitable and sanitary houses for the workmen as a necessary condition for their industrial efficiency and general well-being.

For skilled workmen this Conference recommends the formation of Co-operative Housing Societies with necessary help from employers of labour and from Government.

For unskilled workmen whose needs are exceedingly urgent this Conference considers that in each industrial centre the Government, local authorities, such as District and Municipal Boards, Improvement Trusts etc., and employers should, in close consultation and co-operation, take immediate steps for the provision of suitable quarters sufficient for the number employed in that area.

WELFARE WORK AND TRADE UNIONISM.

This Conference appeals to the employers of labour

as well as to the advocates of Trade Unionism to recognize the necessity and the desirability of welfare work and places on record its belief that the welfare work movement does not wish to interfere with the legitimate growth of labour movement, taking as it does its stand on principles of humanity and industrial efficiency irrespective of differences between capital

TEMPERANCE.

This Conference is of opinion that all welfare work will continue to be hampered till the complete removal of the drink evil is secured by the immediate closing of all liquor shops in industrial areas.

ALL-INDIA INDUSTRIAL WELFARE WORK ORGANIZATION

1. (a) That an organization called the All-India Industrial Welfare Work Organization be established and a provisional Committee consisting of the following persons be appointed to frame Constitution and Rules thereof and to take the necessary steps to carry out its objects and to report to the next Conference Committee:—

1. Mr. W. H. Wiser, (Cawnpore)
or
Mr. R. H. Robinson, (Cawnpore)
2. Mr. John L. Mott, (Nagpore)
3. Mr. L. A. Brokenshire, (Jamshedpore)
4. Miss G. A. Pearce, (Madras)
5. Mr. K. P. Lele, (Solapur)
6. Mr. H. C. Reed, (Mining Federation, Calcutta)
7. Dr. A. N. Tankaria, (Ahmedabad)
8. Mr. N. M. Joshi, (Bombay)
9. Mr. S. B. Kulkarni, (Bombay) and
10. Mr. P. G. Kanekar, (Bombay).

The last two gentlemen should act as Provisional Joint Secretaries.

(b) That the above-mentioned Committee be authorized to make the necessary arrangements for holding the next Conference at such time and place as may be deemed suitable.

(c) That also an appeal be made to all industrial concerns to extend their financial and other support to this organization.

PAPERS SUBMITTED TO THE ALL-INDIA WELFARE CONFERENCE, 1922.

GROUP I.—EDUCATION.—

Education of men and women workers and technical education for children and adults, by Miss Pearce, Joint-Principal, Buckingham and Carnatic Mills School, Madras.

The care of Juvenile Workers, by K. G. Alurkar, B.A. Welfare Supervisor, Standard Mills Centre, Tata Sons Workmen's Institute of the Social Service League, Bombay.

GROUP II.—CO-OPERATION.

The promotion of the Co-operative movement among factory workers and the encouragement of thrift, savings banks, sick benefit funds and life insurance.....by Mr. H. F. Ball, I.C.S., Assistant Registrar, Co-operative Societies, C. D., Bombay Presidency.

Promotion of Co-operative movement among factory workers and encouragement to thrift, Savings Banks, Sick Benefit Fund and Life Insurance, by Mr. L.S. Potnis, B.A., Special Assistant Registrar, Purchase and Sale, Bombay.

Do.—by Mr. S. Ganesh Devrukhkar, Auditor, C. S. Welfare Work, Bombay.

Promotion of Co-operative Societies among Industrial Workers, by Mr. N. K. Roy, Assistant Registrar, Co-operative Societies, Behar and Orissa.

GROUP III.—CHILD WELFARE.

Problems relating to working mothers and their infants, by L. Wemyss Grant, Organizing Secretary, Lady Chelmsford All-India League for Maternity and Child Welfare.

Do.—by Dr. Mrs. F.D. Barnes, M.D., W.M.S., Bombay.

Observations on the Agencies for Maternity and Child Welfare Work in India, by Dr. S. Amritaraj, L.R.C.P. & S., D.P.H., Fellow of the Royal Institute of Public Health and Member of the Royal Sanitary Institute, London, Health Officer, Civil and Military Station, Bangalore.

GROUP IV.—WELFARE WORK AND TRADE UNIONISM.

Welfare Work, Trade Unionism and Co-operation by Prof. H. L. Kaji, M.A., B.Sc., I.E.S.

Do.—by Mr. K. V. Deodhar, B.A., Superintendent, Kurla Centre, Tata Sons Workmen's Institute, Social Service League, Bombay.

GROUP V.—HOUSING.

The housing of the Indian Unskilled Workmen, by Mr. W. H. Wiser, Cawnpore.

GROUP VI.—SANITATION AND HYGIENE.

Ventilation and Temperature in Factories, by Mr. T. Maloney, Adviser on Humidification to the Government of India, Bombay.

Improvement in Sanitary and Hygienic condition in Factories, by Dr. R. V. Shiveshwarkar, B.A., M.B.B.S., D.T.M., D.P.H., Acting Assistant Director of Public Health, Gujrat Dist.

Do.—by Dr. Anacis da Gama, Assistant Director of Public Health, Central Registration Dist., Poona.

GROUP VII.—WORKS COMMITTEES.

Works Committee and Settlement of disputes, by R. M. Daruvala, L.C.E., Manager, Tata Mills.

Works Committees.....by P. G. Kanekar, Superintendent, Tata Sons Workmen's Institute of the Social Service League, Bombay.

GROUP VIII.—CONDITIONS OF EMPLOYMENT.

Prevention of petty jobberies and tyrannies in factories, by Mr. N. D. Kadam, Co-operative Inspector, C.E.W. Institute.

Stability of Employment—Problems relating to methods of discipline, conditions of employment and discharges by S. H. Jhabvala.

Problems relating to working mothers and their infants, translated from the speech of Mrs. Saraswatibai Donde, Lady Superintendent, C. E. Kamgar Bhagini Samaj, Bombay.

Stability of employment, by Dr. C. Natesa Mudaliar, L.M. & S., M.L.C., (Non-official delegate from Madras).

GROUP IX.—WELFARE SUPERINTENDENTS.

Welfare Superintendents and their training, by Miss G. M. Broughton, M.A., O.B.E., I.E.S., Adviser, to the Government of India, Department of Industries.

Agencies of Welfare Work and training of Welfare Workers, by Dr. H. P. Dastur.

GROUP X.—ACCOUNTS OF WELFARE WORK.

Report of Welfare Work in the Calico and Jubilee Mills, Ahmedabad, by Dr. A. V. Tankaria, L.M. & S., Medical Officer, Calico Mills.

Report for 1921 of the Empress Mills, (Nagpur C.P.) by Mr. S. B. Mehta, C.I.E., Manager of the Mills.

Maternity Infant Welfare work in the C. & M. Station Municipality, Bangalore, by Dr. S. Amritaraj, L.R.C.P. & S., D.P.H., Health Officer.

Report of the Social Welfare Work in the Buckingham and Carnatic Mills, Madras, by Mr. W. A. Turner, Director, Managing Agents.

Welfare Work at Kirloskarwadi carried on by Kirloskar Brothers, Ltd., District Satara, by Mr. S. V. Kirloskar, Assistant Manager.

Annual Report of the Welfare Department of the Tata Iron and Steel Company, Ltd., for the year 1920.

The Bombay Presidency Infant Welfare Society's work, by the Lady Superintendent.

Welfare activities in the Morarjee Gokuldas Mills, Bombay, Report by the Agents.

The Currimbhoy Ebrahim Workmen's Institute, Social Service League, Bombay, Welfare Work.

Report of the work done from the 1st of November 1920 to the end of October 1921.

Tata Sons Workmen's Institute Welfare Work, Social Service League, Bombay.

Summary of the Third Annual Report from the 1st January 1921 to the 31st December 1921.

Organization for the Promotion of Industrial Welfare Work, by Miss G. M. Broughton, M.A., O.B.E., I.E.S., Adviser, Government of India, Department of Industries.

Need for Central Organization for the promotion of Welfare Work, by Mr. N. M. Joshi, B.A., M.L.A., Servants of India Society, Bombay.

Results of investigations of Dr. Kendrick and Dr. Paul on the prevalence of Hook worm infection among the industrial classes in the Madras Presidency.

Forest Products Research.

Those who realize the importance of the application of the science to industries which are burdened with so many waste products as forestry and saw milling, are perturbed at the present time over the attitude of the Commonwealth Government towards the Forest Product Laboratory. A year or so ago, the State Government agreed to provide a site for the laboratory near Perth and to supply £5,000 towards the cost of erection and equipment, while the Federal Government undertook to build up and equip the laboratory, keep it in working order, and pay the necessary scientific staff to perform the work of the laboratory. The State has fulfilled its obligations in the matter, and the laboratory staff occupying temporary premises in the city, has carried out a great deal of investigation into the forest products of all the States, particularly Western Australia. It has been proved beyond doubt that paper can be made from many of the hard woods of Australia, and an expert leather chemist has commenced a tannin survey of Western Australia, which is a country rich in tannin-bearing materials. Great progress has been made in this branch of research work, and it has been proved possible to eliminate the objectionable colour from the *marri* (red gram) kino, which has so long been a bar to its sale owing to the red hue it imparts to the leather. Investigations have been carried on into the dyeing possibilities of many of the forest products and in numerous directions the laboratory has proved of excellent service to Western Australia. There still remains to be traversed, however, an enormous field of research into the commercial possibilities of hundreds of timbers, shrubs, leaves, barks, etc., and for this purpose large sums of money are required.

For the current year the laboratory's minimum estimate for the carrying out of its work was £10,000. On applying for this amount to the Federal Government, the laboratory

was granted the sum of £1,400, which was augmented by certain of the other States and the Australian Paper Company by £2,000. This brought the income of the laboratory up to £3,400, which is absolutely inadequate for even the partial carrying out of the year's programme. An Advisory Committee to the laboratory existed in Perth and was composed of one scientific forester and two business men much interested in the commercial utilization of the State's products. Faced with every discouragement and no appreciation of their gratuitous services, the committee finally resigned. The State Government has made urgent representations to the Federal authorities to place the laboratory on a proper footing and to provide for its maintenance, but up to the present nothing has been done. It will be a great loss if the laboratory, which has already proved capable of adding materially to the nation's productive power, be allowed to languish and die without even completing the work already in hand.

There has now become available to Americans 150,000,000 silver dollars, symbolical of the end of war. The design was selected by President Harding, and the coin is known as the Harding peace dollar. It contains exactly one dollar's worth of silver, which no other American dollar does. On one side is the familiar profile of Liberty, with the national device "E Pluribus Unum" and the date 1921. On the reverse side, perched on the peak of a mountain is the American eagle, but with wings folded and clutching in its talons a broken sword and an olive branch. In the background is the rising sun. At the bottom of the design is the word "Peace". Eight of the foremost sculptors in bas relief competed for the design. That finally chosen is by Mr. Anthony de Francisci, of New York City.

Industries in Mysore, 1920-21.

By "Viator."

It is quite easy for any one interested in the moral and material progress of India to understand the why and wherefore of an Agricultural or Co-operative Department, but we can understand such a one being puzzled regarding those of a department of Industries. The Report of Mr. Balasundaram Iyer, who officiated as Director of Industries in Mysore during the last three months of 1920-21, will enlighten him to some extent but that enlightenment would have been more complete had Mr. Balasundaram Iyer adopted his own classification of the work of his Department throughout his report. The three main heads under which, in his view, the work of a Department of Industries falls are (i) the investigation of large industries, (ii) the pioneering of factories and experimental work and (iii) assistance to private enterprise and the administration of taccavi loans. One of the first questions the reader of his report will ask is under which of these heads the work of the Central Industrial Workshop falls. He has to form his own judgment on the point, for Mr. Balasundaram Iyer does not tell him. He will probably decide that it comes under the second of them but, be that as it may, we propose to commence this review by a few observations on its operations last year, for a study of these throws valuable light on the weaknesses which seem almost inherent in a Government Department of Industries. We are told that a certain amount of experimental work was undertaken for preparing ratchets, hammers, jackplanes, bolts and nuts, scissors, knives and similar articles, but that the experiment was hardly successful as the margin of profit on small wares of this kind is very small and they cannot be made on a sufficiently profitable scale unless they are made in the mass and with the help of labour-saving machinery. Unless it was intended to show that such goods cannot be successfully turned out by small factories, a proposition which it hardly needed an experiment to demonstrate, it is difficult to understand what useful purpose the work in this direction has served. Again, it is admitted that some of the articles turned out in the workshop, such as ploughs and sugarcane mills, proved imperfect and had to be altered or scrapped. Mr. Balasundaram Iyer consoles himself by the reflection that the attempts yielded a volume of experience which

should prove of value in the future working of the Workshop. But it is a very expensive business acquiring experience in this way and a Department of Industries ought surely to be in a position to profit by the experience of others regarding whose mistakes it should have plenty of information available. If it is to be of real use in pioneering and developing industries, it must undertake experimental work in new directions but the manufacture of ploughs and sugarcane mills hardly comes under this category. Yet again, the report merely states that the audit of the accounts of the Workshop shows that the concern was working at a loss but is silent as to the exact amount of the loss. The Government of Mysore rightly comment on the absence of a clear balance sheet and it is obvious that it is essential that an establishment which is intended to serve as an example to others should be able to produce a proper profit and loss account. A Department of Industries must be business-like if it is to promote industrial development. It may be, as Mr. Balasundaram Iyer argues, that the Workshop does not get as much work as it can undertake with its equipment and that the chief thing necessary is to attract more work. It may also be that the Workshop is at a disadvantage in that it cannot canvass for private work in active competition with private agencies but the solution of these difficulties proposed by Mr. Balasundaram Iyer, which is that Government Departments should give it a preference in placing their orders, is not one that commends itself to us. There is every possibility that this would simply result in Government Departments obtaining goods of inferior quality at higher prices than they could get them through the ordinary channels, thus giving the Workshop a fictitious air of prosperity. The Government say that they are considering the question whether the concern should continue in its present form. Their choice appears to us to lie between two courses only. Either the Workshop should confine itself to Government work in which case its personnel and plant should be regulated accordingly, or it should definitely work as a pioneer factory, in which case it must be run on ordinary commercial lines, that is, it must depend on the excellence of its products and not on the preference of Government Depart-

ments to pay its way and must publish a proper balance sheet. It appears very doubtful, however, whether a pioneer factory is necessary in Mysore for the class of work turned out by the factory. If this view is correct, the Government would be better advised to obtain their requirements through the ordinary commercial channels.

The absence of a balance sheet is not peculiar to the Central Industrial Workshop. For none of the Government enterprises in Mysore is a profit and loss account furnished and, with one exception, Mr. Balasundaram Iyer is content to give the figures of output only. The exception is the Soap Factory which worked at a loss of Rs. 8,803 for the first half of the year though there is reason to believe that this was materially reduced during the second half. This regrettable result was certainly not due to any falling off in the quality of the products supplied by the factory, nor was it due to any defects in administration except perhaps that the receipt of bad tallow from a contractor which diminished the output to some extent might have been avoided. It was due to the chaotic condition of the soap market during the year and, in the abnormal circumstances, we doubt whether any private enterprise would have fared any better or, indeed, as well. The factory has certainly shown that the manufacture of soap is a paying proposition in Mysore in normal times, and it was presumably for this reason that it was decided to hand it over to private enterprise. This decision was, however, rescinded and the factory is to be continued as a Government establishment, the scope of its operations being extended by the erection of a plant for the extraction of glycerine. The Metal Factory, on the other hand, has been definitely handed over to private enterprise after having been at work under Government auspices for about three years. In the absence of any figures regarding its working, the reader has to form his own conclusions as to whether the factory has been handed over to private enterprise because Government consider that it has served its purpose in demonstrating that metal goods can be successfully and profitably made in Mysore or because they are unwilling to incur any more expenditure on it. But as the factory has been taken over by a company of which Mr. V. Rangaswamy Iyengar, who, as Director of Industries in Mysore, was responsible for its inception, is Chairman, the former is much the more probable explanation and the Department of Industries is, at any

rate, entitled to the benefit of a doubt which could easily have been avoided by a little more explanation. The value of the output of this factory last year was Rs. 1.09 lakhs, practically the same as that of the previous year.

We are in entire agreement with Mr. Balasundaram Iyer's view that the Weaving Factory should not work only on commercial lines with the sole object of earning profit but should carry on a certain amount of tentative and experimental work in new directions. He points out that, if the factory were run solely for profit, the proper course would be to confine its attention to the manufacture of one or two lines of goods for which there is a constant demand. He is, in our opinion, perfectly correct in thinking that it does not fall within the province of Government to run a textile concern on these lines since private producers in such a well-established industry as weaving can always take up this work but that it is the business of a Government factory to explore innovations in material, machinery and methods of production, in order to discover what kinds of work can be popularized amongst artisans and small manufacturers so that they can be developed by private enterprise on purely profit making lines. He holds that, judged by these criteria, the work of the Textile Section has been quite successful, mainly, it would appear, because the power looms which have been tried give every indication that they can be used for various kinds of work "for a large scale production". But surely it did not need the work of the Mysore Industries Department to demonstrate that power looms can be profitably used for *large* scale production. That has already been demonstrated by countless textile mills all over India. What is wanted is a demonstration that power looms can be successfully used by the small manufacturer and this, *pace* Mr. Balasundaram Iyer, would seem to be what the textile section has shown. For, after all, the Weaving Factory has only five power looms and, if it can make these pay, the small manufacturer can follow its example with confidence.

As for other experimental work, the history of the four sugarcane installations fully justifies the Indian Sugar Committee's view that such installations fall within the province of the Agricultural rather than the Industries Department and that it was most unfortunate that the former Department was not consulted before the installations were put up. At Hudi there is no cane available, at Agaram

fuel is too dear, at Channarayapatna the ryots are growing paddy in preference to cane, whilst, at Chiksagare, the installation is "not likely to be of much success". In each and every case, an Agricultural Department as competent as that of Mysore could have warned the Industries Department of the probable fate of installations erected in these places. The Sugar Committee have now examined the working of plant of this character in detail and have laid down the conditions essential to its successful operation and it is satisfactory to see that the Mysore Government have directed the special attention of the Director of Industries to their recommendations under this head.

Mr. Balasundaram Iyer does not define a large industry and it is, therefore, somewhat difficult to discover from his Report exactly what was done during the year by his Department under the first of the three main heads under which he classifies its activities, the investigation of large industries. The investigations into the existence of kaolin in Mysore and the possibility of using it for the manufacture of porcelain as well as those into the suitability of land under the Marikanave, Sulakere, and Bhadravati irrigation systems for the cultivation of cane undoubtedly fall under this head. In both cases, the investigations have shown that there is a promising field for enterprise and, in both cases, the Government of Mysore have decided that it is better that the enterprise should be private rather than public. The decision seems to us a wise one, for the Industries Department has quite enough on hand without undertaking the manufacture of porcelain and sugar.

Mr. Balasundaram Iyer devotes a section of his Report to State-aided concerns. One would have thought that the work of such of these concerns as have been given Government loans, even though, in return for their assistance, Government have the right to nominate Directors, would fall under the head "assistance to private enterprises" whilst that of those of which the Industries Department has the entire management would be classified under "pioneering of factories and experimental work". Whatever the correct classification, the information furnished in the Report in regard to all the concerns is distinct. The dividend declared by the Mysore Tannery fell from 25 to 5 per cent, but in a year in which the leather trade experienced perhaps the worst slump on record, it was creditable that any dividend was paid. The

dividend declared by the Bangalore Woollen, Cotton and Silk Mills was the satisfactory one of 20 per cent. The Mysore Economic Union and the Mysore Pharmaceuticals have still to commence dividend-paying. Neither the Tirthahalli Tile Factory nor the Aryan Hosiery Factory which are under the direct management of the Department appears to be working at a profit nor is this surprising when we read that the former has buildings which are too big for its output which difficulties of transport prevent its increasing and that the latter is in charge of a senior mechanic. Something besides mechanical qualifications seems to be necessary for running a hosiery factory successfully, however small its output.

We now come to Mr. Balasundaram Iyer's third head, assistance to private enterprise and the administration of taccavi loans. It is probable that no part of the Department's work has really been of more benefit to the development of the State than this; for, no less than 182 installations have been erected in various parts of Mysore with the help of Government loans amounting in all to some Rs. 7½ lakhs. Pumping plants are the most popular and there are 51 of these. Flour and rice mills come next — 26 of each — followed by electric motors of which there are 12. At the other end of the list come such activities as an electric laundry, a toy works, a photographic studio, an envelope cutting machine and fruit cultivation. Mr. Balasundaram Iyer says that 161 out of the 182 installations are working "more or less" satisfactorily and that 21 have not yet proved successful. In judging this record, every thing depends on the exact significance of the words "more or less". Eleven per cent is not a high proportion of failures, certainly not high enough to cause misgivings if the remaining 89 per cent. can definitely be classed as successful. But it would seem that the last sessions of the Representative Assembly and the Economic Conference were of opinion that Mr. Balasundaram Iyer's "less" outweighed his "more" and that a large number of the installations must be regarded as failures. A detailed investigation is being made into the real position but Mr. Balasundaram Iyer holds that it is only in very few cases that failure has been due to causes over which the Department has control or influence. Apparently he considers that the control and influence of the Department extend only to the satisfactory installation of the right type of machinery, for amongst the causes of failure enumerated as being

outside them are the location of installations in unsuitable places and the non-availability of raw materials. Here we join issue with him. The Mysore Industries Department is making a grave error which will greatly jeopardize its usefulness if it regards the suitable location of installations and the availability of raw materials for them as matters with which it has no concern. It is failing in its duty, if, for example, it allows a cane-crushing plant or a ginning factory to be put up with the help of a Government loan in a locality in which there is insufficient cane or cotton to feed them or where these cannot be obtained at a price which enables them to be crushed or ginned at a profit. Human nature is so constituted that there are persons who can convince themselves of the probabilities of success for any enterprise especially when it is not their own money but that of Government which is being embarked in it. It is for the Industries Department to correct this tendency as far as possible in the light of the more complete information it should possess and to decline

to assist any undertaking in which the speculative element bulks too largely. We can only express the hope that the impression given by the Report is not the correct one for, if it is, we fear that the Rs. 90,000 at present in arrears will increase very rapidly. It is to the good that Government assistance to private enterprise is not confined to the grant of loans but also takes the form of lending trained men, of whom, however, the supply is all too short, and also of obtaining not only quotations for machinery but also the machinery itself.

In these days of labour unrest, it would have been surprising if Mysore had entirely escaped contagion. On the whole, the State got off lightly but two strikes at Messrs. Binny's mills, and the Maharaja mills in Bangalore, a small strike at the Kolar Gold Fields and a longer one at the Government Press show the necessity, which is recognized in the Report, that the Department of Industries should take a closer interest in labour conditions and labour problems.

Flax-Growing in Kenya.

The recently issued report of the Director of Agriculture of the Kenya Colony shows clearly how great are the strides that have been made within the past few years in flax culture. The figures have reference only to the state of affairs on June 30, 1920, and it may be taken that the acute depression that has since reigned has at all events prevented a further extension of acreage, even if it has not caused a severe shrinkage.

For the year ended June 30, 1920, the area under flax was returned at 24,174 acres, whereas 12 months previously only 9,297 acres had been sown and harvested, the output being dealt with by the 68 flax mills, totalling 1,274 scutching wheels, that have been erected in the colony. The average yields per acre are given as 1.70 cwt. of flax, 2.35 cwt. of tow, and 1.32 bags of 238lb of linseed.

Within the period under review the outlay on seed and ocean freight alone was reduced by no less than £60 per ton from the prices ruling a year before. A decrease in the ocean freight rates, combined with a reasonable selling price, is held to open up the prospect of the establishment of a trade in exporting linseed; however, for this to be profitable to the grower he must be able to count on not less than £1 per cwt. for his product.

Half of the total area under cultivation in

the country, 12,000 acres, can be credited to the districts of Trans-Nzoia and the Uasin Gishu Plateau, which, as an officer of the Flax Department recently pointed out to a gathering of East African Flax Growers, allowing only the low figure of 20 acres to one ton of fibre and one ton of tow, should have yielded a harvest of 600 tons of each product. That exactly one-sixth of each amount, 100 tons, was retted and scutched within the year to June, 1920, is eloquent testimony to the need for improved cultivation, treatment, and organization.

Upto 1918 water retting was practised in Kenya, but the establishment of the industry on a commercial scale has made it very evident that dew retting is far superior and indeed necessary. This is an unfortunate fact, for, having to be carried on during the rainy season, it means that the planter has to divide his time between planting, scutching and retting, and crowd into a space of some five months the work of a whole year.

It is thus necessary for the good of the individual and of the industry that the acreage should be reduced to manageable proportions, rather than that there should be a constant and large increase, especially in view of the fact that labour, though plentiful, is at present, very inefficient.

Industrial Notes from the United States.

By A. T. Marks.

Washington, D.C., U.S.A., April, 24, 1922.

—Some wonderful new developments have just been announced in the American manufacture of phonograph records, both for commercial and entertainment purposes.

Manufacturers of records upto this time have absolutely refused to divulge the secret of making such discs for various reasons.

The writer has just completed a tour of the largest record-producing plant in the United States, and believes that a brief description of the manufacturing processes will be interesting to the readers of the journal.

The first step in the manufacture of a phonograph record is the making of original wax discs, which are about one-half inch larger in diameter than the finished record and about three-quarters of an inch thick. These discs are formed by using a fairly soft composition of wax. The original wax discs are placed on the recording machine, which is really a phonograph, except that it is much more delicate in construction and that the action of the needle is reversed—that is, instead of the needle falling into a groove it is forced by the transmitting diaphragm into the soft wax.

In making the first impression the recording room is so arranged that the best results will be obtained. The recording machine is placed in a separate room and only the receiving horns project into the recording room. Special attention is given to the seating arrangements in the recording room. The orchestra seats are arranged in a semi-circle. Each chair differs in height to suit the needs of the individual instruments to be played in order that the air vibrations will be most effective in registering through the diaphragm on the recorder. In making vocal selections very special attention is given to distance.

The most important factor in the making of records is the first soft wax record or "master". The impressions on the wax are very delicate and therefore the record could not be used directly in producing other records. The next step in the manufacturing of records is carried out in what is termed the electrolytic department. The equipment in this department consists of large rectangular tubs lined with lead and filled with the same solution as is used in making electrotype plates.

Suspended on the two round brass rods running across these tubs are anoids, usually copper plates, with two wires hooked over the rods, making it possible for the entire plate to be submerged in the solution. Parallel with these bars and midway between is another round bar of the same size on which swivel connections, evenly distanced, are placed. Suspended vertically from each of these swivels is a small rod with a long end hanging into the solution below the swivel and a short end above the solution and the swivel. At the ends of these rods, in the solution, are the wax discs.

The object of this arrangement is to have the discs maintain a continuous pendulum motion in the solution. This motion is produced by a rod which continuously moves back and forth.

To explain how the small particles of copper are taken from copper plates or anoids and deposited on the wax discs would require more space than can be given to it. It is sufficient to know that the action is due to the electric current *plus* the chemical action of the solution. The electric current, circulating through the anoid bar and anoids over and across to the wax discs hanging on the swivel arm, carries small particles of copper from the anoids and deposits them on the wax discs with such close adhesion that they pile up in a mass over the wax record.

Great care is exercised in keeping up an even, continuous flow of electric current. The humming of the brushes on the commutators tells the story of good or bad results.

After an immersion of twenty-four hours the wax record is covered with a coating or sheet of copper. This copper sheet is stripped off very carefully and the rough edges of the copper discs are trimmed off that portion which projects beyond the diameter of the wax discs. The disc becomes the "master matrix" and from it reversed duplicators are produced in any quantity. The copper impressions stand out on the master matrix where they are depressed.

After coating the back and edges of the master matrix with wax so that the copper particles will cling only to the part not waxed these impressions are suspended in the same manner as the original wax disc, which I have described. In twenty-four hours the

discs are stripped again, the same operations being carried out.

The second copper disc is called the "mother disc," and by treating the mother disc the same as the master matrix there is produced what is termed the pressing matrix. Now, it is this latter which is used to press records for the trade. The master matrix is very carefully guarded by the producing concern.

The product, after passing through these stages of manufacture, is ready for the press-room. In this department there is a steam rolling-mill consisting of two or three steam-heated rollers driven by gearing. On the top of this machine there is a hopper into which the composition entering into the finished product is placed. The materials used in the ordinary black record consists chiefly of shellac mixed with rotten stone and lamp-black. These are carefully pulverized and cleaned free from metal or other foreign matter. This composition is placed in the hopper and heated and mixed by the rolls to a consistency a little stiffer than bread dough.

Great care must be exercised to get a resultant mixture that will produce a hard, glossy record impervious to changes of temperature. A mixture too soft would warp and the record would become useless.

The mixture is flattened out into strips by another set of heated rollers. Rectangular strips about five inches wide and three-sixteenth of an inch thick are cut and sent to the press-room. These strips are placed between dies consisting of two square steel plates into the faces of which round depressions have been turned equal in depth to one-half of the thickness of the finished record *plus* the thickness of the copper matrix. A separate lipped ring holds the matrix by its outer edge face up, so that when this ring is screwed down the matrix is part of the half mold.

The composition squares of shellac stock are cut into smaller squares, and these are laid on a warming plate until warm enough to proceed. Then the printed paper circle and title of the record is placed over the central space and pressed securely.

The complete die of two halves is now placed in the hydraulic press, the dies being warm and the stock pliable. As the two half dies are pressed together the lump of stock is flattened until it flows to fill the entire opening *plus* a little that overflows, the latter forming a slight fin around the outside edge of the record midway of its thickness.

The hydraulic presses have 600 pounds

pressure to the square inch, and each record is subjected to from 10,000 to 20,000 pounds total pressure.

The finished record is placed in a trimming lathe and the fin or overflow is shaped off. The next process is the testing of the record on an ordinary phonograph. After this testing and carefully examining for imperfections the records are ready for sale.

DEVELOPMENT OF THE RADIOPHONE.

What is the most unique and fascinating hobby in America to-day? A safe guess, surely, is the radio telephone. To conceive of one million people throughout the United States using the same medium to talk with one another in much the same manner as a roomful of people at a meeting or social gathering; to listen at given intervals to concerts where all manner of instrumental and vocal performances are faithfully reproduced; to intercept the news of the nation as broadcasted by many central stations in the larger stations; to receive valuable and timely agricultural reports of importance to farmers—all this constitutes an achievement that may well be called the hobby of hobbies. The achievement is still more important when it is considered that these radio telephone activities are a product of the resourcefulness and inventive genius of the American youth. Helped along by our judicious yet liberal laws for the control of amateur wireless activities this pastime has grown in a few years from one of a few hundred followers to one of hundreds of thousands—to be exact there are at this writing approximately one million amateur wireless men in the United States to-day.

One phase of the wireless hobby that is by far the most responsible for this rapid growth is the rapid and successful development of radio telephony. It is true that amateur wireless telegraphy has been an American institution for the past ten years or more, but the art in the past has been largely confined to professional telegraphers or to those who had the time and patience to master the art of sending and receiving the Morse or continental codes. Many youth and young men were attracted by the initial fascination of communicating without wires; but unless they were willing to devote a year or more to systematic telegraph practice the art soon lost its charm, since there was not much amusement in listening to rapid meaningless dots and dashes.

The war, which has been blamed for so many ills, did one good turn for amateur radio by

training many men in its use and by developing the radio telephone to a remarkable point of operating efficiency. These trained men went back to civilian life and to amateur radio. Incidentally, they spread the gospel to others, with the result that we have to-day a formidable army of enthusiasts, more characteristically known among themselves as "bugs".

The radio telephone appeals almost irresistibly to the average person after a brief acquaintance with its possibilities. Indeed, that is why, where formerly none but school boys played with radio telegraphy, to-day all manner of men and women have joined the ranks of radio telephone operators in all parts of the country. Nor is this strange when one considers the fact that with an inexpensive receiving set erected in a few hours' time, one is soon "listening in" on the doings of the world. Not listening in as an eavesdropper, mind you, for wireless conversations are of the informal, good-fellowship kind — harmless, instructive, and as interesting as an open forum.

There are in the United States to-day three broad classes of radio telephone activities, which are as follows:—

1. Commercial radio telephony.
2. Wired wireless, or radio applied to wired systems.
3. Amateur radio telephony.

The first class — commercial radio telephony — holds considerable promise for the immediate future, although at present its scope and exact usefulness are not quite as clearly delineated as the amateur application. Moreover, when placed on a commercial basis the initial expense and maintenance are necessarily higher than for amateur requirements. Adjustment of the apparatus and test periods must be reduced to a minimum, for time is an important factor as compared with the amateur who has plenty of time at his disposal. The present land-line telephone does everything that the commercial radiophone is capable of doing, with the possible exception of radio telephone service to ships at sea. Then, too, there are other special cases where it could be used to excellent advantage. Simplicity of operation and absolute reliability at minimum cost are therefore the factors with which future developments must concern themselves to make commercial radio telephony popular and profitable. To this end, the engineers of the largest radio corporation in this country are now engaged in perfecting several standard radio telephone sets, each designed for a

specific purpose and use, ranging from small-power to high-power outputs.

"Wired wireless," a somewhat contradictory expression, applies to a recent development where radio principles are used in long-distance wire telephony and telegraphy. Quite effective multiplexing is made possible by the use of radio waves which are guided by wires already in use for other purposes. In fact, from six to ten simultaneous channels of communication are sometimes available on a single land-line wire. The "wired wireless" telephone may be used in conjunction with present power transmission lines, steam and electric railway tracks, metal fences, etc., thus proving valuable and economical to central power houses, sub-stations, and to telegraph and telephone trunk line systems.

But amateur radio telephony is easily the most popular application of the radio telephone up to the present time, because, as I have outlined, it finds ready application for many purposes which at once become interesting, instructive and fascinating.

As an illustration of the importance which the United States Government attaches to the amateur radio telephone, the Department of Agriculture is planning its use to replace the present radio telegraph broadcast system which covers about half the country. The existing system was recently started from the air mail radio stations at many points in widely separated sections of the country, each one of the stations having a radius of about 350 miles.

At eight o'clock each morning market reports covering grain, live-stock, fruits and vegetables are transmitted by regular wire to the above-referred-to air mail stations. From these points they are sent broadcast by radio telegraph. Any one equipped with simple receiving apparatus picks up these reports readily; and, consequently, their value to farms, banks, and commercial clubs is fully appreciated, great numbers of receiving sets being constantly added throughout the country.

The Australian Postmaster-General proposes to ask Parliament next session to sanction a loan for £8,000,000 to improve and expand the telephone system throughout Australia and to build trunk lines. His idea is to adopt a continuous scheme which will be independent for three or four years of the annual Parliamentary Votes. The cabinet has made available £200,000 as a first instalment.

Canadian Trade and Finance.

Montreal, 1st May, 1922.—The political and economic situation abroad has some favourable aspects. The announcement of the British Government relative to provisions for their war debts has had a buoyant effect on sterling. A settlement of the Turko-Greek difficulties which is at last tentative, has its effect in the general improvement. The rescue of Austria has been definitely and courageously undertaken. Some hope is held out that the Genoa Conference will have beneficial results. It is of no little significance that many of the European countries, with the notable exception of the Central Powers, are reducing their paper currency outstanding.

Among other factors which undoubtedly assisted in the rise in sterling in New York, was the improvement in the British trade balance. Another factor is the gradual adjustment arising out of the fact that sterling was out of line with its purchasing power parity, caused by the slight rise of prices in the United States, and the fall of British prices.

THE MARK.

A point which causes anxiety in the European situation is the failure of the German mark to respond to the general improvement of the exchanges. Along with sterling, which rose to a high point of \$4.44 $\frac{3}{8}$ in New York on the 1st of March, the franc and the lira also have shown an upward tendency. The mark, however, has continued to find new low levels.

An explanation of the collapse of German exchange is found in the unfavourable financial situation in that country. An unbalanced budget, fresh issues of paper currency, the sale of marks by Germans desirous of placing their funds in some stable country, and probably liquidation of part of the world's large speculative holdings of marks, all have contributed to the decline. Germany contends that the burden of reparation payments makes improvement difficult. That contention is not without support in many quarters outside of Germany. Germany habitually had an unfavourable trade balance prior to the war, so far as the import and export of commodities was concerned. Invisible items, however, such as the returns from investments abroad, payment for services, especially carrying charges and remittances from immigrants, resulted in a balance in her favour. Now all that is changed. At the present time, Germany has few invisible items to reckon with, in fact they

are all but negligible, and, taken over a long period, her imports are far in excess of her exports. To make her reparation payments, she is compelled to resort to the sale of marks to secure the necessary exchange, hence the increase in paper money, and the high internal prices of goods and labour. The Government deficit for the fiscal year ending March, 1922, is now estimated at 180 billion paper marks.

PRICES.

The most significant feature in the price situation since the end of January, was a marked rise in the wholesale prices of certain commodities. As registered by the Department of Labour's Index Number of wholesale prices, there was a noticeable recovery in the price of grain and of certain other products. Taken individually, some of these rises were of considerable importance. The commodities which registered the greatest increase in price, especially during February, were wheat, fodder, hogs and hog products, sheep, poultry and fruit. Manitoba Northern spring wheat jumped from \$1.19 per bushel, at the end of January, to \$1.47 towards the first of March, on the Winnipeg market. Ontario winter wheat advanced in Toronto from \$1.00 per bushel to \$1.30 and up, while during the same period, barley rose, in Winnipeg, from 56 cents to 67 cents per bushel. The price of hogs jumped from \$11.75 per 100 pounds to over \$13 nearly in March. Apples, too, registered considerable improvement in prices; Northern Spies, for example, rose from \$9 to \$12 per barrel in the Toronto market. Balancing these increases against a number of small declines, the aggregate result was an increase in the wholesale price index from 22.77 to 229.5.

We are still a long way from the pre-war level of prices. At the same time, considerable progress has been made in the downward movement. Since May 1920, when the high point was reached, a 36 per cent, decline has taken place.

A slight decline in retail prices has occurred since the end of January. This has been due largely to the receding prices of certain dairy products, especially milk, butter and eggs. Salt pork, bacon, lard and sugar assisted somewhat in the movement. Rents, however, on the average, have shown a slight decrease. The average cost of a family budget of 29 staple foods, in some sixty Canadian cities, according to statistics compiled by the Department of Labour, registered \$10.60 at the

beginning of February, as compared with \$11.03 in January and \$14.08 in February 1921.

GENERAL PRICE MOVEMENTS.

The importance of the close relationship which exists between price movements and business conditions in general is a subject which has attracted no little attention during recent years. The question, however, merges into that of the ill-understood trade cycle. All that can be done, is to point out the attendant circumstances surrounding price changes in the past, and vaguely to assume that similar conditions will produce similar movements. With this thought in mind, a brief survey of the main price movements during the past century, may not be out of place.

Owing to the lack of statistics on Canadian prices extending back over a long period, the figures of the United States' prices are used, since these are the price movements that most resemble our own.

At the beginning of the last century, prices were on the up-grade, and reached a peak

during the war of 1812. About 1815, there was a very sudden drop, after which a long decline ensued. The lowest point in this decline was reached in 1848. Prices then started upward, with a slight sag just prior to the Civil War. A spectacular rise took place during the sixties, and the peak almost paralleled that reached about 1812. After the Civil War, a second long decline took place. The movement culminated in 1895. From this point, prices started upwards once more, rising slowly until the outbreak of the World War, and sharply from then on. The high peak was reached during the spring of 1920. Since that point a fair start downward has been made.

Thus it is seen that the recent high peak of prices is the third in about a century. After the other two peaks, viz., in 1812 and 1865, there followed long periods of falling prices, that continued for about 35 years in each case. In the periods referred to, however, the decline was never an uninterrupted one, but was varied by occasional periods of rising prices.

Retrenchment in India.

The following *Communique* has been issued here:—The following gentlemen have consented to serve on Lord Inchcape's Committee to inquire into the expenditure of the Central Government, the terms of reference to which have already been announced:—

Sir Thomas Catto Bart; Mr. D. M. Dalal, Member of the Council of India; The Hon'ble Sir Alexander Murray, Sir Rajendranath Mookerjee and Mr. Purushotamdas Thakurdas.

The Committee including the Chairman will thus consist of six members; Mr. F.H. Howard, Controller of Finance at the India Office will be Secretary.

Mr. R. A. Mant will supervise the preliminary work which is now being carried out by the administration departments of the Government in advance of the assembling of the Committee.

Sir Thomas Catto is a partner in the firm of Messrs. Yule Catto and Company, London.

Mr. D. M. Dalal is a member of the India Council. He served on the Committee on Indian Exchange and Currency in 1919 and wrote the minority report of that Committee.

The Hon'ble Sir Alexander Murray was formerly President of the Bengal Chamber of Commerce which body he now represents on the Council of State.

Sir Rajendranath Mookerjee is the senior partner in the firm of Messrs. Martin and Company, Calcutta. He served on the Indian Industrial Commission.

Mr. Purushotamdas Thakurdas, C.I.E., is a well-known Bombay cotton merchant. He was a member of the Indian Railway Committee.

There are 4,294,629 foreigners living in New York City, according to an analysis of the 1920 census figures. The number of native New Yorkers is only 1,164,834. There are more Russians in New York than in Warsaw, the total being 99,4556. The Italian population of the city, numbering 802,893, exceeds the population of Naples by more than 100,000. The Irish come next on the list of foreign races with a total of 637,744. There are well over 500,000 each of Austro-Hungarians and Germans. The Russian population has registered an enormous increase since 1910, when it was far behind the German element, with a total of only 296,000. The number of Russians in New York City is now only about 170,000 less than the entire native American population.



Views and Comments.

BY "ECONOMICUS".



The desperate state of the Indian finances has been the subject of much comment both in the British and Indian Press. A recent issue of the "*Near East*" suggests three means of developing "the great national estate which the Government holds in trust for the community":—"First to restore, and then largely to increase the earning power of the railways; to turn to the most profitable use whether for power or for irrigation, every available supply of water; to realize the almost incalculable possibilities of the State forests; to take boldly the full share of the unearned increment of the land, which by the ancient institutions of the country is reserved for communal purposes." The first three measures require enormous capital, material and human, and an efficient and honest service to carry out the functions. It is beyond the range of immediate possibility to procure them in sufficient quantity. To tax the unearned increment of land is a favourite measure with some economists, but we are afraid that indiscriminate expropriation in India is likely to sap the springs of agricultural finance and to adversely affect the economic status of the majority who are small producers.

* * *

The great inconvenience felt by passengers and traders by the frequent breaks of railway gauges is a long standing grievance. We believe it was a Frenchman who said that "the Indian Railway system is a huge joke." Speaking on this subject recently before the Royal Society of Arts, Mr. Frederick George Dawson made a spirited plea for the unification of our gauges. He draws pointed attention to the fact that the apathy of the railway administration and the absence of an enlightened public opinion are the real impediments and explains that "at present so long as the railways can carry in their own time all traffic offering itself in the course of the year, without guarantees as to date of despatch or time of transit, their obligations to the public are legally fulfilled and their earnings are more or less assured." The State, the Railway Board and the public must make an immediate move in the matter.

Writing on the same subject, Sir Michael O'Dwyer says in a recent issue of the "*Daily Telegraph*":—"The real remedy for the present financial *malaise* lies in a more equitable system of taxation." He characterizes the Government's financial policy as timid which tries to avoid antagonizing the three large sections—professional politicians (chiefly lawyers), great landlords, big manufacturers—now dominating the All-India and Provincial Legislatures. He proposes to impose (1) a tax on agricultural incomes, (2) succession duties and (3) probate duties, instead of multiplying the burden on the poor man by increasing the duties on matches, sugar and piece-goods. We submit that the lines of fresh imposition here laid down are quite sound, that is, assuming that the State proves beyond doubt that fresh income is a necessity for improving the common amenities of the people. We feel, however, that the furthest limit of taxation is already in sight and the next move of the State must be to effect devolution of functions to local bodies and communal organizations on self-governing basis. A further propaganda is required to teach the rich some of the duties they owe to the poor in the village.

* * *

Continues the same Journal:—"No Indian is a good citizen who buries his resources in the ground or expends them in useless jewellery; no Indian is a good citizen who allows young brains capable of productive work to be devoted merely to the deadening routine of public administration." Quite true, but we are afraid that the proper conditions, partly to be provided by the State, are somewhat lacking; for the 'land-hunger' and the habit of burying the treasure underground are the legacies of insecurity which unfortunately rears its head even to-day and which the State has to eradicate with the co-operation of the people. Secondly, the facilities for training are so meagre and one-sided that the young brains will be pardoned for rushing to take advantage of what little is given.

Tractors of 15 to 20 h.p. are in demand in Tunis.

Economic Notes.

INDUSTRIAL, AGRICULTURAL, EDUCATIONAL AND GENERAL.

The Director of the International Labour Office recently asked the Government of India to nominate an Indian official for appointment to his staff in Geneva. The Government of India has selected Rao Bahadur S. K. Sundarachari, Assistant to the Commissioner of Labour in Madras, who will sail for Europe at once. The Rao Bahadur will do purely secretarial work and the announcement that he has been selected as a "representative" of India is entirely misleading.

* * *

The position of the British Cellulose Company is reported to be precarious. The issued capital of £6,500,000 apart from over £300,000 in debentures, is in danger of being lost unless financial support is forthcoming. The company aimed at creating a large market for its artificial silk, but technical difficulties particularly in connection with dyeing its manufactures have arisen. Drastic reorganization proposals have been made, including an offer by the Government which holds 1,450,000 preference shares against advances in connection with war work, to denote half its holding. The ordinary shares, which at one time rose from six pence to £14-10, are now obtainable at 3s. 9d.

* * *

The South African Industrial census, giving statistics respecting factories and productive industries in the Union for 1919-20, includes 6,890 establishments, being an increase of 922. The value of the machinery, plant, and tools employed increased by £2,500,000, whilst a growth in the number of employees is recorded of 32,432, of which 8,885 were Europeans. The total wages bill was £19,000,000, being an increase of £1,500,000, or 32 per cent. The value of the materials used was £53,850,000 of which £28,500,000, or 53 per cent., was South African material. The value of the articles produced was £92,913,000, an advance of £22,000,000, or 31 per cent. over the previous year. Whilst the above figures display satisfactory progress, the next census will probably reveal that many of the weaker concerns have since succumbed owing to adverse economic conditions.

British West African traders complain of high taxation and excessive railway rates; comparing these with the lower freights and duties prevailing in French West African colonies. There has been a steady decrease in exports from Nigeria during the last three years, owing to freights and export duties and to the heavy duties on all imported goods, mainly cottons bought by the natives. As a result, discontent is growing, and there is a marked decrease in native products. It is stated that those who do work carry their produce over the border into the French spheres where higher prices are obtained.

* * *

A number of suggestions for the absorption of the entire power output of the Ceylon hydro-electric scheme have been put forward. One of these is the use of electric energy in the manufacture of rubber goods. A factory will shortly be established by the Mayo Rubber Sole Factory Company, Ltd., to manufacture rubber ware, principally sandals and boot and shoe soles. The authorized capital of the Company is Rs. 400,000, of which Rs. 80,000 is set apart for machinery, tools, etc. As soon as the new company is in working order an advertising campaign will be begun all over the world and rubber shops will be opened in all the chief trade centres.

* * *

Excellent progress has been made towards the completion of the big iron scheme at Bhadravati in Mysore. Up to the end of the last official period, a sum of Rs. 1,20 lakhs had been expended on the venture. According to present arrangements, the mining of iron ore and flux will be proceeded with near Chattanahalli and Shunkargudda in the Shimoga District as a temporary measure, pending the construction of the Kemmangundi ropeway. There are now sufficient quantities of material for the institution of operations, and the requisite machinery is on the way out from England. The two main lines of tramway, namely, the Bhadravati-Kemmangundi and Bhadravati-Agasanahadlu lines, covering an extent of 45 miles, required for the transport of fuel for the works, are almost ready, and ballast trains are to be run shortly.

The value of the petrol vehicle for branch line traffic on railroads is now established, especially in America, where the scheme originated and it has been left to our cousins across the water to experiment with this type of road vehicle on tramway rails in place of electric trolley cars.

* * *

Co-operative organizations in China are assured freedom of trade and exemption from requisitions. By an order of the Minister of Trade and Supply no goods owned by the co-operatives may be requisitioned. The military authorities may not order co-operatives to supply them with products. Co-operatives must quote prices in compliance with standards established by the Government.

* * *

The sales concluded by the Czecho-Slovak Company for export have attained a total of 245,000 tons of sugar for the season 1921-22. With an estimated production of 570,000 tons and a consumption of 250,000 tons of refined sugar, 75,000 tons still remain available for the market. The requirements of Austria alone will amount to about 60,000 tons and if only 50,000 tons are reserved for supplying this requirement, no more than 25,000 tons will be left for the remaining countries.

* * *

Is it beyond the realms of possibility, asks *The Commercial Motor*, to predict that, at some future date, the flexible petrol-propelled road vehicle will be adopted to operate on the existing tramway tracks of some of the towns and cities of this country? If the prophecy be not too bold, the time may not be far distant, says our contemporary, when the tramcar, as a passenger-carrying vehicle, will have disappeared; at least, in areas where the paucity of traffic is against its remunerative operation.

* * *

A Bill has been introduced into the New Zealand House of Representatives establishing a Meat Pool and empowering the constitution of a Board of Control comprising two representatives of the Government and five of the producers, with an agency in London. The Government is empowered to prohibit the export of any meat and to make the issue of a meat export licence conditional on the observance of the Board's requirements. Meat exported may be wholly or partially controlled by the Board, with power to grade, ship, and to control the conditions, time and terms of sale. Future shipping contracts will be subject to the consent of the Board.

In the course of a recent speech in Bradford Mr. Reginald McKenna (chairman of the London Joint City and Midland Bank, and a former Chancellor of the Exchequer), said that there were no signs of a trade boom, but there was ground for optimism regarding a recovery of trade. Manufacturers were now requiring more money, and their turnover was becoming more rapid. It could not be expected that a healthy revival would come until Britain was in a position to make further substantial reductions in taxation. The income-tax and the super-tax were preventing the growth of capital, which was indispensable for the progression of business. He (Mr. McKenna) approved Mr. Stanley Baldwin's quiet confidence during recent months. Considerable loans made to the Dominions, colonies and foreign countries were being expended in purchases of British goods, and Britain's export figures were swelling in consequence.

* * *

The Indian and Eastern Engineer writes:—The discovery in Brazil of a mineral containing seven per cent. of uranium oxide, and consequently a large amount of radium has aroused considerable interest among scientific circles. According to Mr. J. Johnson of Trivandrum, in Travancore and other places in India similar and richer minerals have been reported from time but nothing has come out of them. To take Travancore alone as far back as 1915, Mr. E. Masillamani, the then State Geologist, reported a green monzite carrying 6.56 per cent. of uranium oxide. Late in 1916 or early in 1917, a variety of thorianite was discovered by him, carrying something like 40 per cent. of uranium oxide. In the same year the same Geologist discovered two other minerals in Travancore. The exact composition of these has not been yet determined, but they are minerals very much like æschynite and hatcheteolite and carry a very large amount of uranium oxide, from 15 per cent to 27 per cent besides tantalum niobium, thorium, etc. Near Madura, on the Siromalay Hills, one comes across allanite, a mineral containing a fair amount of uranium oxide. In Kadavur Zemindary, a mineral very similar in composition to Hatcheteolite has been discovered carrying as much as 25 per cent. of uranium oxide. This brief list discloses that there are some minerals in South India which are as rich as, and even richer in uranium oxide and consequently of radium, than the Brazilian mineral recently reported.

By a firman issued by H.E.H. the Nizam all fees are to be abolished in all upper and lower primary schools maintained by the Government or local funds. All such education is to be henceforth free. The Nizam's Government have not yet come to a decision in regard to compulsion.

* * *

In the northern States of Mexico the cultivation of ixtle, a fibre resembling henequen, but of an inferior grade, is being revived. San Luis Potosi is one of the chief market centres both for leaf ixtle and for root or tula ixtle — sometimes called tampico. Ordinary ixtle is used for making cordage, matting, and coarse goods; tula is utilized in the manufacture of scrubbing and other stiff brushes. The average price charged by producers of the fibre is 5c. per lb. f.o.b. steamer at Tampico, or 5½c. f.o.b. Laredo; but quotations are usually made f.o.b. shipping point in Mexico, payment against Mexican railway bill of lading.

* * *

The most colossal wireless station ever built is now in full working order, and, night and day, messages are flashing through space to all parts of the earth. The station is situated near Port Jefferson, Long Island, about seventy miles from New York. It was declared open in an official ceremony by President Harding, despite the fact that he never visited the station. This is not a paradox; the President sat at his desk in Washington and pressed a button which set in motion an automatic sending device which was electrically coupled to the radio station. The President's message was received by wireless stations in twenty-nine countries.

* * *

Of all tried methods of making tea the most unattractive was the method at one time followed in China. Mr. Okakura Kakuzo says in his "Book of Tea" that so early as the fourth century of the present era tea was highly prized by the Chinese for "relieving fatigue, delighting the soul, strengthening the will, and repairing the eye-sight." The Taoists claimed it as an important ingredient in the elixir or immortality, and the Buddhists used it to prevent drowsiness during their long hours of meditation. But at this stage of history it must have been fine, confused drinking, for it was boiled with rice, ginger, salt, orange, or lemon peel and horrible to relate, sometimes with onions! The Russians who learned to make tea from the Chinese, still retain the slice of lemon.

A proposal has been placed before the Queensland Government to lease an area of 1,000 acres in the north of the State for the cultivation of bitter cassava. Mr. P. T. Griffin, who arrived from England recently, has made an offer to lease the territory, and has in view the manufacture of power alcohol. He has informed the Government that he has £250,000 of British capital to put into the venture, and on the strength of his representations facilities have been placed at his disposal for an inspection of tropical land likely to be suitable. It is estimated that 39 gallons of alcohol can be made from a ton of cassava.

* * *

An immigration holiday for five years is proposed by Mrs. Moore, the former actress Lillian Russel, who went to Europe representing the United States Labour Department as Special Immigration Inspector. If a five years' holiday is impossible, Mrs. Moore suggests an amendment of the "three per cent" law now in effect to bring about greater exclusion. Describing conditions in Central Europe, the report says: "Crowds of unwashed, ill-fed, prospective immigrants, mostly of low mentality and moral fibre, surge round the American Consulates seeking admission to the United States. Laws of the most painstaking character are provided to prevent the shipment of bad live-stock and diseased plants and seeds, but the same care is not applied to the immigrant stream."

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The Commercial Supplement to *The Japan Weekly Chronicle*, dated April 6th, 1922, says that the Japanese paper mills by agreement curtailed output by 20 per cent in December, 1920, but reduced the curtailment by 10 per cent on March 1st. "From May 1st next restriction of production will be withdrawn entirely. This decision is attributed to the fast decreasing stocks and increasing demand for paper. In other words they have starved the market and forced up the price. The amount of paper in stock on January 31st, 1921, totalled 129,559,000 lbs. which decreased to 100,000,000 lbs. on September 30th, 1921, and to 82,000,000 lbs. on March 1st, 1922. The total production of printing paper in 1921 amounted to 534,450,000 lbs., whereas the total sale in the same year was 551,319,000 lbs. an excess of 16,860,000 lbs. It is estimated that the manufacture of paper for the year will amount to 647,000,000 lbs., an increase of 112,000,000 lbs. over 1921."

Economic Gleanings

WORLD'S PROGRESS IN FEW WORDS.

Orders have been placed in Jamaica by the agent of a company in Canada for the supply of half a million dry coconuts monthly to be converted into food products; soaps, etc.

During January last Tunis exported 244,880 tons of iron, of which 134,240 tons were sent to Holland, and 110,640 tons to England. During the same period, Tunis exported 12,266 tons of lead (to France.)

The outlook for Finnish trade appears to be somewhat brighter, and the prospects for British firms are improving owing partly to the reduction in their prices, and also to the fact that Germany is so full of work that new orders are only accepted against long delivery.

This year promises to be a record year in Jamaica for bananas. At least two new companies will ship fruit to northern markets making six in all—one exporting to England and five to the United States. It is estimated that the 1922 crop should reach 16,000,000 bunches.

We have received a copy of "Fascinating Egypt and the Soudan" for the season 1921-22 which has recently been issued by the *African World*, 801, Salisbury House, London-wall, E.C. 2. Up to the outbreak of the Great War, seven annual editions of this handy, compact and well illustrated guide-book had appeared, and the present eighth edition is the first to be published since the upheaval which began in 1914 put an end for a time to the Egyptian winter tourist season.

The High Commissioner for New Zealand has received advice from Wellington to the effect that the first shipment of new season's New Zealand fruit, consisting of 14,715 cases of apples and 600 half-cases pears, left the Dominion on February 24 by the ss. *Westmoreland*. The vessel is expected to arrive in London about April 6. The fruit-growing industry of the Dominion is making rapid strides and the present season's shipments to the United Kingdom are expected to total about 100,000 cases.

A message from Brussels says that the price of coal has been reduced by 6f. per ton (2s. 6d.) in consequence of the reduction in wages which came into force on Monday last.

Tunis offers a good market for common glass ware such as decanters, tumblers, lamp chimneys and hollow ware. In 1920 the import value of these articles reached 5,000,000f. (1,530,000f. only from France).

Japanese imports for February amounted to yen 196,000,000 (£19,600,000) against yen 119,000,000 (£11,900,000) in February, 1921; while the exports were yen 101,000,000 (10,100,000) against yen 76,000,000 (£7,600,000).

Finnish Customs returns for February show a total export value of 116.3 million of marks, and an import value of 116.6 millions. The total value of exports for January and February, 1922, amount to 262.8 millions as against 159.6 millions in 1921.

The Minister of Finance has ordered that henceforth all goods imported into Czecho-Slovakia must be paid for in the currency of the country of origin. This order will not affect British merchants who have always insisted upon payment in sterling. It will, however, affect German and Austrian exporters.

The prospects for the Finnish shipyards during the coming summer are not bright, unless the exchange of the Finnish vessels at present retained by the Bolsheviks against those held by the Finns takes place. This exchange would relieve the situation, as the Finnish vessels would require much repair.

A useful discussion took place at the last meeting of the Trinidad Agricultural Society on the subject of a resolution from the Naparima Branch Society urging co-operation in the direction of developing the manufacture and consumption of cocoa and chocolate. It was argued that the condition of the cocoa market abroad rendered such a step necessary. A committee was appointed to report on the proposal.

The Government of British Honduras has entered into a contract with the Jefferson Construction Company, of New Orleans for the improvement of Belize Harbour.

A monthly shipping service has been established between Jamaica and the American Virgin Islands by the Eastern Asiatic Steamship Company.

A factory erected recently by the Lightfoot Refrigerating Company at Colombo is now manufacturing 16,800 cubic feet of oxygen a day. This output is fully absorbed for welding requirements.

Work is progressing very satisfactorily in connection with the Ceylon railway extensions. More rails and bridge parts will have to be imported during the course of the year to cover the needs of the new works.

The maiden voyage of the new Italian liner Julius Cæsar, of the Navigazione Generale Italiana, has been fixed for May 4, when it will leave Genoa for Buenos Aires, and is due to cover the journey in 13½ days.

French aviation experts have recently visited Algeciras and Tarifa, with a view, it is understood, to the establishment of an aerial passenger and commercial service across the Strait of Gibraltar between Tarifa or Algeciras and Tangier. The journey, (some 20 miles only from Tarifa), takes about 15 minutes.

The F.B.I. correspondent in Valparaiso, reports that trade in Chile is stagnant. There seems to be no buying power in the market and imports have dropped practically to nil. Everyone seems desirous of liquidating his stocks, and it is therefore cheaper to buy in the country than to import. Any improvement in the position must depend upon an improvement in the nitrate industry.

A resolution has been prepared for introduction in the British Guiana Legislature to authorise the Government of the Colony to make advances to sugar producers at the rate of \$10 per ton of cane sugar manufactured during the 18 months from March 1, 1922; the guarantee to be in respect of advances made by banks doing business in the Colony; advances to be repaid to such banks within three years, the rate of interest being not less than 6 per cent.

From April 2 to 13 next a Fair and Exhibition is to be held at Marrakesh, the centre of one of the most populous districts in Morocco.

It is announced that the exchange of money orders between Kenyas and Uganda and Zanzibar has been re-established on the sterling currency basis.

An expert who visited Trinidad recently and examined the Government's floating dock has reported that in its present condition it is unsafe for the docking of vessels. Extensive repairs are recommended.

Trade relations are developing between Latvia and Russia. Merchants from the latter country are coming over in growing numbers to Riga to buy goods from local merchants, or are arranging for local representatives in Riga to buy goods there and send them into Russia.

For the month of October last, the exports of cotton from Uganda are returned at the high figure of £159,344, a sum representing about 36,700 cwt. A surprising feature of the statistics covering that period is that the export of chillies was valued at no less than £12,725.

The newly formed Chamber of Agriculture and Commerce of St. Vincent has approved a bill whereby legislation will be enacted to levy a moderate export tax the proceeds of which will assist to maintain the Chamber. The organization is to be incorporated; and will thus obtain official status.

It has been decided that the Jamaica representative of the West Indian delegation which is to visit England to urge the reduction of import duties on Colonial produce and also the granting of Imperial preference on a larger scale than that adopted two years ago will not only direct attention to the sugar industry, but will put forward a case on behalf of tobacco and coffee.

It is officially stated that the railways built in Mesopotamia by Great Britain during the war are now being valued by a representative of the Disposal and Liquidation Commission with a view to their transfer at a valuation to the Government of Irak. It is possible that King Feisal's Government will be prepared to sell or lease the railways to a private commercial company after they have been taken over.

The Russian Commercial Mission has ordered paper goods in Prague to the value of 9,000,000 crowns (about £36,000) to be paid for in cash.

The Czecho-Slovak Ministry of Commerce has reduced considerably the export duty on wood and removed all restriction on the export of girders.

The Czecho-Slovak Government has acquired from the municipalities concerned the necessary ground, and is taking steps to enlarge the ports of Komarno and Parkany on the Danube.

With the object of encouraging industry in Transylvania, the Government has reduced railway rates in favour of several industrial undertakings. Workmen there are demanding a 50 to 60 per cent increase in their pay.

The German file combine has fixed the addition to the prices of October 1921, at 180 per cent. The syndicate of vice manufacturers has raised the increase on the basic prices of group 1 to 10 from 1,200 marks to 1,600, of group—to 14 from 1,300 to 1,800 marks.

Three foreign companies—one French, one Hungarian, and one German—have offered to send tank cars to Rumania—the French 400 and the Hungarian and German 250 tanks each—for the transport of oil products. The Rumanian Government is discussing terms.

German manufacturers of railway material have started fresh negotiations with the object of forming a rail-syndicate. Representatives of all the works concerned are meeting in Düsseldorf in order to draw up rules. There are still great differences of opinion among the manufacturers.

A company already owning several bacon factories in Denmark has completed its plans for erecting a new factory at Sønderborg. This factory, which is intended to deal with 50,000 pigs annually, is said to have forestalled the establishment of a co-operative bacon factory in the same town.

The ration of coal to the German cement industry is to be doubled in order to allow greater activity in the building trades. In February the output of cement was 70,000 metric tons less than in January; at the same time the supply of coal was 40,000 metric tons less than in January.

The Danish Export Association of Copenhagen has decided to amalgamate with the trade information branch of the Danish Foreign Office.

A further order for 300 locomotives has been received in Germany from Soviet Russia. It will be divided among the firms belonging to the union of locomotive Factories.

The association of brass works at Cologne has increased the price for brass sheet by 500 marks to 10,000 marks, and for brass rods by 400 marks to 7,600 marks for 100 kilos.

The Governor of British Honduras has recommended to the Legislative Council of the Colony that in order to encourage the establishment of saw mills in the Colony, the Council should approve of exemption from export duty for 10 years of all timber sawn in the Colony other than logs squared for exportation.

The Soviet Economic Council has sanctioned the holding of a German industrial exhibition in Moscow during the coming summer. The Russian commercial mission in Berlin is inviting especially manufacturers of agricultural implements and machinery, and of railway material.

The German convention prices for motor-lorries have been increased to 370,000 marks (December 1921, 225,000) for a 2-ton lorry, to 390,000 marks (245,000) for one of 3 to 3½ tons and to 410,000 marks (265,000) for one of four tons. The association of German motor car manufacturers has also raised the prices for motor cars. A 6-h.p. chassis without tires is quoted at 175,000 marks (November 1921, 90,000), a 10-h.p. at 280,000 marks (142,000), a 16-h.p. at 360,000 marks (180,000).

The Government of Trinidad has informed the Chamber of Commerce of the Colony that as the majority of the West Indian Colonies are unable to join in the proposal to establish a West Indian Trade Commissioner in Canada, and owing to the heavy expenditure that would consequently devolve on Trinidad alone, no further action can be taken in the matter. The feeling of the Trinidad chamber is that the question of having a West Indian Trade Commissioner in Canada is a matter of prime importance to all the Caribbean Colonies and should be taken up when the present financial stringency has passed.

Economic Reviews Reviewed.

WITH EXCERPTS AND COMMENTS.

Reconstruction—American Economist's Suggestion.

The City Editor of *The Times* writes :—

Dr. Benjamin M. Anderson, the well-known American economist, has contributed to the *Chase Economic Bulletin*, (No. 1, Vol. II.) an article which takes the form of a memorial to the next International Financial Conference. It contains a great deal of sound matter, and though it is largely a repetition of what has been said before, it puts together in handy form the fundamentals of economic reconstruction. Dr. Anderson begins by declaring that any fundamental solution of the problem of trade with Europe must involve drastic reform on the Continent of Europe itself. The main items in the reform programme must include a balancing of Budgets in order to provide a surplus for the redemption of debt and the funding of floating debts into long term issues. Next a drastic currency reconstruction is called for in order once more to link the currencies of Europe with gold and to abolish the debt basis of currency. Most of the Continental belligerents, Dr. Anderson says, should establish a parity with gold much lower than was the case before the war.

RESTORATION OF THE GOLD STANDARD.

In our opinion, no other course is possible, because the restoration of the old gold parities would involve such a heavy increase of the burden of public debts, and such violent declines in commodity prices, in Germany, Austria, and Poland, for example, that chaos would ensue and reconstruction would be completely checked. To put gold value behind the mountain-high masses of European paper currencies would be the work of untold years of grinding toil for the people for the benefit of the *rentier* class. As Dr. Anderson points out, more is to be gained by an early restoration of stability than by aiming at a remote and improbable restoration of the old parities and an ancient price level. No one will dispute the fact that the fluctuating paper money of Europe is the most serious impediment to industrial progress in Europe. Dr. Anderson realizes that if industry in Europe is to revive and if the reforms indicated above are to be adopted, new capital must be provided. This capital will have to be found largely by America and Britain.

DR. ANDERSON'S PLAN.

Dr. Anderson puts forward the following plan :—

A comprehensive settlement might be worked out in the form of a compact between the Governments of Great Britain and the United States, together with the bankers of Great Britain, the United States, and Japan as the party of the first part, and the former Continental belligerents as the party of the second part. The compact might take the following form :—

(1) The Government of Great Britain and the Government of the United States agree to cancel the debts due to them from their Continental Allies, and (2) the bankers of the United States, Great Britain, and Japan undertake to use their best efforts to place with American, British and Japanese investors large

new blocks of continental securities, providing new funds for rehabilitation purposes.

These undertakings are to be made contingent upon the following considerations :—

1. The Continent of Europe undertaking to accomplish the financial and currency reforms indicated above, accepting a rational settlement of the German indemnity question, and introducing a proper degree of freedom of trade.

2. The lenders of the new funds to retain supervision over the spending of the funds, to make sure that they are used for essential purposes only. The necessity of this last provision is emphasized when we reflect that Europe has already had from the United States, since the Armistice much more than enough money to have accomplished her rehabilitation had it been effectively used.

Dr. Anderson is careful to explain that no proposal is made by him for the cancellation of the British Government's debt to the United States' Treasury. With the world revival which should come from the carrying out of this comprehensive plan, Britain, Dr. Anderson declares, could pay her debt without question, for our own finances are sound and our difficulties he attributes primarily to our relations with Continental Europe.

Schemes for stabilizing the exchange rates which do not strike at the underlying difficulties are, as he says, futile and harmful. Exchange can be "pegged" through borrowing in the American market, so long as American lenders will supply unlimited dollars for the purpose. This was done during the war and for five months after, the greater part of the dollars required being supplied by the United States Treasury. It was necessary during the war. After the war it did great harm. European moneys, validated by the pegging process, were spent extravagantly for American products, including luxuries, chiefly designed for immediate consumption. The revival of European exports was hampered at the same time that imports to Europe from the United States were increased. Francs and lire would buy more in the United States than they would buy at home. Industrial revival in Europe was hampered by this. Dr. Anderson rules out the scheme for an international foreign exchange bank to stabilize exchange. Such a bank could accomplish its purpose only so long as its American stock-holders or its American depositors provided unlimited dollars for the purpose of purchasing European exchange. The bank would be increasingly a bank with American liabilities and European assets.

The same thing, he says, applies to the proposed foreign exchange clearing bank, which would be a clearing house that would not clear.

Europe's Pre-war Prosperity.

The following is from a striking article by Sir Leo Chiozza Money in *the Financial Times* :—

The new Europe contains over 500,000,000 people. So quickly does its population multiply that the war losses, frightful as they were, have merely checked

the rapid growth. Most of the European nations, although not France and probably not Russia, have made increase despite the war. Our own population is now over 47,500,000, as against 46,000,000 in 1914; Germany, area for area, has grown; Italy numbers 40,000,000. France, on the other hand, steadily wanes; she is now, with the people of Alsace-Lorraine, a smaller nation than she was in 1911 without Alsace-Lorraine. At her present rate of retrogression she will number only 31,000,000 in 1950, as compared with her present 39,000,000.

But a cause more potent than war now threatens the European population. Europe, the cradle of civilization, possesses the most artificial economy in the world, and Britain, the first nation to build population on coal power, is the part of Europe most dependent upon commerce for livelihood.

It is essential for Europe as a whole, and doubly essential for ourselves, to derive supplies from extra-European sources. It is also necessary for Europeans, by trading freely with each other, to gain mutual strength. The entire world must be called in aid by each and every nation if all its peoples are to make the most of their work. The value of a man's work in our modern world lies in the facilities for exchange.

The pre-war world of commerce was full of illustrations of these economic truths. Direct and triangular exchanges between nations gave increase to all. We sold cotton or iron to India and took payment in sugar or dyes from Germany, or in timber or eggs from Russia. We do not now get food from Russia, and India is the less able to buy our iron because she no longer sends to Russia the tea which Russia paid India for by food and materials sent to us.

Within Europe, Russia was and is the chief undeveloped estate. She was a splendid source of food and materials. Germany took from her corn and materials. We ourselves derived from Russia great quantities of flax, hemp, timber, skins, ores, and food-stuffs. The pre-war Russian exports were worth over £160,000,000 when the rouble was not a fiction, but worth 2s. 1½d. Of this great sum more than nine-tenths consisted of food and raw materials. The reduction of this trade to an almost negligible quantity is a loss to more than Russia alone; it is for the world at large, the drying up of a fountain of wealth.

If the world had done its best and wisest after the war trouble could not have been avoided. Commerce ebbs and flows in peace, and war magnifies the customary oscillations. But the world had not done its best. With a commerce having its very roots in the international helpfulness and co-operation, expressed in enormous exchanges of commodities and services the world has vainly imagined that trade is consistent with the collection of enormous debts not only as between late enemies, but even as between those who fought shoulder to shoulder against a common foe. With the need of fruitful exchanges greater and not less than before, every nation in the world has set up new barriers against exchange. Britain and America alike have not been saved by a sense of humour from demanding free imports even while denouncing and legislating against cheap imports.

How the growth of mutual commerce worked for the good of all before the war is still imperfectly understood. It is often imagined, and indeed declared, that the opening of the twentieth century was marked by intensified competition. It is not realized that British exports made almost unparalleled progress in that very period. In 1900 our exports (of British goods) were worth £291,000,000, and the figures were

justly hailed for a triumph; never before had we sold so much or so profitably. Yet, after only 13 years more, and although prices rose only 16 per cent our exports amounted to £525,000,000!

Let us see if this increase was at the expense of other nations, in accordance with the curious theory that what is one nation's gain is another's loss. In the same 13 years, 1900-1913, German exports rose from £231,000,000 to £496,000,000, and American exports from £286,000,000 to £510,000,000. All the other nations made great gains, which I need not trouble to record. The fact is that the world as a whole was moving forward and prospering as never before. Each nation grew in trade because of that common, that mutual, that co-operative growth, which was ever more strongly marked by international arrangements, combinations, conferences.

Everywhere in Europe the economic advance, based upon the fruitful exchanges of enlightened men, made its visible mark. Travelling through four Continental countries just before the war, I found in each the most amazing signs of prosperity. An exhibition of arts at Christiania was only less remarkable than one on the Rhine. And from countries I did not see I had accounts from friends which bore out my own observations. For example, how well dressed and prosperous, I was told, looked the people of Genoa.

It has been said that the European economy is artificial. It is none the worse for that. Civilization is supremely artificial. It is artificial because it is the negation of the law of nature, which is death. Civilized man survives because he artificially and successfully combats pestilence and famine. The artificial life of civilization is far more secure than the "natural" life. Curiously, it is the nation which does not trade, and lives entirely on its own harvests which experiences famine.

India, China, Russia — these are the places where famines bring death to millions, and it is the trading States which have the strength and the power to come to their aid. Man is the more secure and the more widely he trades and the more he multiplies the number of sources from which he draws his supplies.

The need to be "a good European" emerges clearly from our considerations. We cannot thrive while the Continental nations languish. We grow with their growth; we share perforce in their despairs. It is perfectly true that the world outside Europe now affords bigger markets than the entire world, with Europe, offered us 50 or even 30 years ago. Nevertheless, the extra European world is linked to Europe by ties which must regain their strength if we are fully to regain our pre-war trade, and if the 500,000,000 of suffering Europe, of whom our own people form nearly one-tenth, are to find economic salvation.

The Cultivation of Sisal.

Referring to what it said last month at the beginning of the opening article concerning Mr. C. F. Hutchinson's (of Ceylon) promised book on "Sisal and its Cultivation," the following note on the subject may prove of interest, says *Tropical Life* :—

Quoting from p. 584, *et seq.* of the *International Review of Agriculture of Rome* for May 1920, year xi, No. 5 (received in July, 1921), students of *Le Journal d'Agriculture Tropicales* in 1919, are reminded that MM. Hauteville and Vuilleumier discuss our notes on sisal cultivation, M. Hauteville in the May, 1919

issue, (of *J. d'A. T.*, No. 159, pp. 260-263), and M. Vuilleumier in November (pp. 340-341 of No. 162).

The first authority refers to the article in *Tropical Life* of 1918 on *Agave rigida* var. *sisalana* plantations, which cover a considerable part of East and West Africa, special attention is called to certain plantations on marshy land associated with one of the German companies, about which he has several times expressed doubts as to the possibility of cultural and financial success under such conditions. Having pointed out, in order to have the matter properly considered, the risk of planting the agave on very dry land and in a very dry climate, whilst admitting that the risk was less great in the case of var. *sisalana* than for var. *elongata* and less still for *A. cantula*, and less again for *Fourcroya* spp., he could not agree with some of the theoretical statements advanced by business men, especially those so far supported by any specialist. It is not whether a plant can thrive here and there, that the planter should consider, but whether it will keep all the qualities necessary for the justification of its cultivation on a large scale.

M. Hauteville then goes on to discuss the yields mentioned in *Tropical Life*, and takes the opportunity of comparing these yields, following the standard of the most leaves possible in the least possible time (it appears that *A. sisalana* develops a flower stalk and dies in about six or seven years in Africa), with the yields obtained in Mexico, where there is not such a good crop per year, but where it lasts over a period of twenty years.

The average yield obtained, as reported for one year, is higher in the second case than the first. On the other hand, the author notes that to cut after three years has always been considered premature; the agave has then a supple, fine and silky fibre, but non-resistant, and the vigour of the plant suffers from this premature operation.

African agave plantations are scarce because the climate and soil are neither of them suitable, because they are worked too soon, and perhaps improperly, and it is also to be feared that the planters do not allow a sufficient group of leaves, say, twenty-two, to remain on each stalk to maintain its vigour.

M. Hauteville, with reference to an assertion made by Herson that the examples of stock proceeding from suckers is strictly limited to that of the parent plant, says that it is the first time such a thing has been notified, and he declares that he possessed at La-Pho (Tonkin) various agave stalks which are five or six years old and come from suckers rising from the parent stalk ready for sending up their flower stalks, the signal of their approaching death.

As a result of the article by M. Leon Hauteville, the *Journal d'Agriculture Tropicale* received from M. René Vuilleumier, Agent-Consular of France at Quelimane, and Director of the "Empreza Agricola do Lugella," a note in which the author describes the experiments. On the land in question, the *A. rigida* var. *sisalana* produces its flower stalk after about five and a half to six years. The cutting can be begun about the third year, and carried on then under normal conditions for two and a half years. Each year, a healthy plant gives from sixty to eighty leaves, average weight 70 grm., making an average total of 175 leaves per plant. The fibre yield is from 3 to 3½ per cent.

On the plantations the spacing varies, but includes 2 by 2 m. Wider planting sometimes is preferable for inter-cropping, which is practised for the first two years; the first year with cotton, the second with maize.

Experience shows that, to establish a plantation, it is wiser to plant out after a year in the nursery. Plants from suckers do not develop so well, and may have a shorter life (by two or three months) than those raised from bulbils. Lugella has a plantation of about 150,000 cuttings which was made in January 1915, and taken from suckers from parent plants which had only lasted until the end of 1915; not one of these plants had produced its flower stalk at the end of 1919. The plantation of the "Empreza Agricola do Lugella" has at present four millions of cuttings with two millions of bulbils in nurseries.

Sir Michael Sadler on Teachers.

The Young Men of India for April publishes a remarkable lecture delivered by Sir Sadler in London on "Should Teachers be Civil Servants." The lecturer is against teachers being Civil Servants and we give below some of his arguments:—

There is a great deal to be said for teachers being civil servants. For one thing it enables the Government to keep lists of teachers and of their categories of service, giving to each of them their assigned rate of salary, of increment and of retiring allowance, and in this way the body of teachers may be brought under closer discipline and control. It would be possible, I suppose, to arrange that no teachers should utter an expression of opinion in public, or they might be encouraged to give their approval to the principle on which the Government itself is founded. And it is easier under a civil service arrangement to secure for groups of teachers suitable commencing salaries, suitable increments, suitable retiring allowances. We must allow all that.

On the other hand, I am bound to say that I feel that in so far as education is an art, in so far as it really depends on the personality and the heart of the individual teacher, you do unwisely if you impose upon that personality any unnecessary shackles of Government service. The heart of education lies in disciplined freedom, and the necessary condition of public employment in the civil service would—I do not say in all cases, but certainly I think in some cases—a little impair the happy and fruitful freedom of the teacher's mind and acts and words. In the second place, though, of course, education is a great national service, its main advance is by the daily industry and conscientiousness of scores of thousands of men and women, nevertheless, at critical moments in the world's history, the course of this great educational system is really directed by the foresight and genius of great individuals. At all times there are the prophets, some of whom fail to get their words listened to, but at all the great advancing points in the history of education you get the man or group of men, or the woman or the group of women, who have instinctively felt how education should advance, and have successfully deflected its course into other channels. I think, in this connection, of Rousseau and Pestalozzi, not to speak of later prophets. I do not think Rousseau would have made a very good civil servant, and though Pestalozzi was at the most fruitful period of his life actually in the employment of Government, he was working independently rather as the head of a school like a concentration camp than as a member of a civil service.

In England I see no immediate likelihood of teachers being organized as a branch of the civil service.

Mysore Economic Development Board.

PROGRESS REPORTS.

Mysore Economic Conference.

DEWAN'S CONCLUDING REMARKS.

The following remarks were made by Mr. A. R. Banerji, President of the Conference, on the 8th June, 1922 in winding up the proceedings of the Conference:—

Gentlemen, I do not propose to keep you long with any lengthy remarks at this stage, as the questions relating to the work of the Conference and the subjects on the Agenda have been fully discussed by the members and reviewed by my colleagues. I shall, therefore, confine myself to a few important points. In the general observations of the work done during the year, Mr. Kalami referred with some emphasis to the need of giving speedy effect to the resolution contained in the Government Order on the Education Memorandum. I need hardly assure you that Government are at one with you in your desire to secure quicker progress and they share the regret that circumstances of which some of you may be unaware, have occasioned some delay in the introduction of the schemes sanctioned in that order. A reference to the Government Order will show that out of 21 lakhs needed for financing the new reforms, about 19 lakhs have to come partly from Mohatarfa and Local Funds General, which have been made over entirely to the District Boards and partly from the levy of a special educational cess on Land Revenue and Excise. This is a very large share. When the Mohatarfa and Local Funds General were assigned to the District Boards, it was understood that the District Boards should take up in a large measure the responsibility of meeting the expenditure on the expansion of primary education. Unfortunately however, nearly all the District Boards seemed to have utilized these additional resources for their ordinary work without reserving any portion for expenditure on education. This, Gentlemen, has created an exceedingly difficult position. As regards the other source, *viz.*, the levy of a special cess, as admitted by the members themselves, the response from the District Boards has been far from satisfactory. I, therefore, fully endorse Mr. Kalami's appeal for greater co-operation from the representatives of the public in this matter to enable His Highness' Government to give speedy effect to the order in question.

One of the subjects which elicited lively discussion was the proposal put forward by Mr. Venkatesiah for the simplification of the procedure prescribed for the levy of an educational cess by District Boards. The question was debated with much ability on both sides and though I wish the majority of the District Boards had taken a wider view of their responsibility in the matter of finding funds for the expansion of primary education within their jurisdiction, I feel, in a question like this, that the views of the District Boards deliberately expressed should not be lightly passed over. The fact that in the Districts of Bangalore and Chitaldrug, the District Boards have agreed to the levy of a cess, fills Government with

hope that other districts might also soon reconsider their position. Perhaps one reason for the unwillingness of the majority of the Boards to consent to the cess is to be found in the apprehension that the money so realized might not be utilized exclusively for the benefit of those districts. I agree that in so far as the objection to a levy is based on this ground, it is entitled to some weight and His Highness' Government are prepared to view with sympathy the question of giving more definite assurances on this point to the local bodies concerned.

Reference has been made to the closing down of a certain number of languishing aided village elementary schools, and the fear has been expressed that this might mean a temporary check to the policy of extending mass education. I think there is some misapprehension on the subject. Most of the schools referred to have closed themselves and the Department now has been asked to concentrate its resources to increase the efficiency of those schools which are not in a languishing condition, and have already shown some stability; this need not cause any disappointment; on the other hand should reassure the public at large that Government are determined to make their scheme of primary education as efficient as possible. I think, gentlemen, you will agree that mere quantity is of no value without quality.

Amongst the subjects discussed yesterday, the most important was the question of providing special facilities for the education of Panchamas and the creation of special agency to attend to that work. I may state for the information of the members of the Conference that Government have in view the question of appointing a special officer whose duty it will be to study problems connected with Panchama education and the general amelioration of the Panchamas and help to accelerate moral and material progress amongst the members of that community. Government are fully alive to their responsibility in this important matter and no efforts will be spared to provide Panchamas with special educational opportunities and to improve their condition in other directions.

The other subjects which were discussed with considerable ability have already been dealt with by my colleagues and I need not therefore refer to them. Some of these have been touched upon by me in my opening remarks in which, I indicated the lines of our future programme and I am glad to note that these have been generally approved. The discussion on the Special Committee's report on the constitution of this Conference and the improvement of the work in the districts was most interesting. But you will, I hope, not expect me to give, on behalf of Government, an immediate reply to the recommendations made. I and my colleagues will consider the whole question most carefully and I hope to arrive at a decision which, I trust, will give general satisfaction.

Before concluding, gentlemen, let me return my

warmest thanks for the very kind personal references made by more than one speaker yesterday on my appointment as President of this Conference. As regards my interest and faith in the work of this Conference to which allusion was made, I need not do more than invite your reference to what I stated three years ago when I was officiating in this office. I then stated with reference to this Conference that "before such ideas were conceived elsewhere the prophetic vision of His Highness had outlined a scheme of work to speed up economic development amongst his subjects — a scheme which in its conception was as bold as it was comprehensive," . . . "and that if the Conference proceeded on its career with the ideals that His Highness himself had been pleased to set before us, encouraged by sympathy, energy and support which the Conference would always receive at His Highness' hands, no one need entertain the slightest fear regarding the Conference's future stability and success."

It gives me much pleasure, gentlemen, to note the undiminished enthusiasm with which the Conference pleaded for a continuance of our activities. It was even a greater pleasure to be assured by Mr. Kalami and other speakers of their hearty co-operation in carrying on the work of this Conference. I, therefore, look forward with hope and confidence that though the financial contribution of Government for the work of this Conference in the immediate future may hereafter be somewhat on a modest scale and it may not be possible to give more than Rs. 50,000 in the next year's Budget, the energy, the enthusiasm and the public support of the members of this Conference, the Central Boards as well as the District Boards will more than make up for the deficiency and enable the Conference as a whole to present a record work in the coming year on which it may well congratulate itself.

Gentlemen, the session is over.

Board of Industries and Commerce.

The following is a summary of the proceedings of the eleventh Meeting of the Board of Industries and Commerce held in the Chambers of the First Member of Council on Wednesday the 3rd May, 1922, commencing at 3 p.m.:

Present.

Rajamantrapravina P. Raghavendra Rao, Esq.,
B.A., B.L., (*Chairman*).

Members.

The Director of Industries and Commerce.
The Director of Geology.
The Deputy Director of Commerce.
B. K. Garudachar, Esq.
P. A. Barton, Esq.
V. Manikyavelu Mudaliar, Esq.
C. Narasimhiah, Esq.
B. Osmankhan, Esq.
Singri Nanjappa, Esq.
M. Venkatasubbiah, Esq.
W. E. Clifford, Esq.
Mahomed Abbaskhan, Esq.
Sylvester Pais, Esq., B.A.
C. Narayanaswami Chetty, Esq.
C. Narayana Chetty, Esq.
C. Subba Rao, Esq.

Before proceeding with the business on the Agenda the Chairman said that he was glad that once again he had the pleasure of meeting the members of the Industries and Commerce Board and expressed his

hope that both the official and non-official members would continue to extend to him the same measure of co-operation they had been giving to his predecessor. On his part, he assured the members that they might always rely upon his assistance and sympathy in the work before them.

On behalf of the members, Mr. C. Narasimhiah thanked the Chairman for his kind words and hoped that under the wise and able guidance of the Chairman, they would be able to do solid and useful work.

CONSIDERATION OF THE DRAFT ANNUAL REPORT OF THE BOARD FOR THE YEAR 1921-22.

The draft report prepared by the Secretary and approved by the Chairman was considered. The members were asked if they had any suggestions to make on the draft. Mr. Mahomed Abbaskhan requested that information regarding the administration of the taccavi and other hire-purchase loans granted from the beginning might be incorporated in the report. The Chairman observed that the Industries and Commerce Board had only to do with the recommending of loans and that the further measures regarding the disbursement and recovery, rested with the Director of Industries and Commerce and that the information required by the member could be found in the administration report of the Industries and Commerce Department. It was therefore considered unnecessary to incorporate the information in the report.

Mr. Abbaskhan also suggested that the names of official and non-official members of the Board might be included in the draft report. This was agreed to.

The report was generally approved by the members and adopted.

CONSIDERATION OF THE DRAFT PROGRAMME OF THE BOARD FOR THE YEAR 1922-23.

The draft programme was circulated to the members and their suggestions invited. The Chairman dealt with each item on the programme under consideration, explaining the present position and requested the members to state what definite course of action was possible or indicated under the several heads.

After detailed consideration, the programme for the next year was settled as follows, including the two new subjects suggested by Messrs. P. A. Barton and Sylvester Pais:—

1. Taking measures for the establishment of the following industries by the formation of syndicates to work out schemes on Joint-Stock partnership basis.
 - (a) Silk-weaving Factory with power looms.
 - (b) Manufacture of Sodium bicarbonate from alkaline earth.
 - (c) Establishment of a Factory for coffee curing at Chickmagalur.
2. Improvement of handlooms weaving in cotton, silk and wool by establishing small factories with improved power appliances.
3. (a) Utilization of Forest Economic products.
 - i. Lac. ii. Rattan.
- (b) Measures to be adopted for carrying out afforestation in the State on a large scale.
4. Development and utilization of local mineral resources.
5. Improvement of minor and rural industries by the introduction of improved appliances.
6. Provision of capital for industries and trade through private banking agencies.
7. Measures to be adopted for expanding the external trade of Mysore and restoring the same into the hands of the local people.
8. Introduction of a system of training apprentices in the several State and State-aided industrial concerns.

9. Revision of the industrial survey of the State.

10. (a) Organizing an industrial conference of persons interested in trade and industries.

(b) Publication of bulletins regarding particular industries and trade.

The Chairman requested the members interested in particular subjects included in the programme to furnish notes which might be useful in discussing the subjects when they come up before this Board for consideration.

SELECTION OF PROPOSITIONS TO BE MOVED AT THE ENSUING SESSION OF THE MYSORE ECONOMIC CONFERENCE.

As most of the propositions were received late, the Chairman suggested that typed lists of the propositions received might be made and circulated to the members who might select any four among them and intimate the same to the Secretary at a very early date so that four propositions which have received the highest number of votes might be finally chosen. The suggestion was accepted.

The meeting then terminated.

P. RAGHAVENDRA RAO,
Chairman.

Board of Agriculture.

The following is a summary of the proceedings of the twelfth Meeting of the Board of Agriculture held in the Chambers of the Second Member of Council, Public Offices, Bangalore, on Saturday, the 13th May 1922 at 3 p.m.—

Present.

Mir Humza Hussein, Esq., B.A., B.L., (Chairman)
Members.

The Revenue Commissioner in Mysore.
The Chief Engineer of Mysore.
The Director of Agriculture in Mysore.
The Live-Stock Expert.
The Registrar of Co-operative Societies.
The Superintendent, Government Gardens.
The Superintendent of Sericulture.
Lt.-Col. W. L. Crawford, D.S.O.

Mr. H. Krishna Sastry.

„ T. Narasinga Rao.

„ R. Gopalaswami Iyer.

„ P. A. Gosayee.

„ B. Srinivasiengar.

„ G. Girimaji Rao.

„ A. Gopalakrishna Naik

„ B. M. Shama Rao.

„ K. Suryanarayana Rao.

„ N. Krishna Iyengar.

„ D. C. Subbarayappa, *Secretary.*

Mr. Lakshmana Reddi intimated by wire that he could not attend the meeting owing to illness and Mr. Nadig Lakshmana Rao wrote expressing his inability to be present at the meeting on account of some domestic inconvenience.

2. Before the day's proceedings commenced, Messrs. H. Krishna Sastry and T. Narasinga Rao made short speeches welcoming the new Chairman on behalf of the members, and expressing their appreciation of the valuable work turned out by him as Chairman of the Education Board. They also expressed the hope that his wide knowledge and experience would prove of immense help in guiding the various activities of the Board of Agriculture.

The Chairman made a suitable reply thanking the

members for their kind sentiments and assurances of hearty co-operation.

3. *Annual Report of the Board for 1921-22.*—The consideration of the draft annual report for the year 1921-22, copies of which had been circulated among the members previously, was then taken up.

One or two clerical errors were pointed out by some of the members and these were rectified.

Resolution 1.—It was resolved that the report as finally approved be forwarded to the Economic Development Board.

4. *Propositions and subjects for discussion at the Conference.*—A list of the propositions and subjects received from individual members and from the several District Boards, had been circulated among the members beforehand. It was brought to the notice of the members that, in accordance with a resolution passed at the last meeting of the Economic Development Board, only four propositions required to be sent up to the Conference from each of the Central Boards; and they were asked to select the required number from among the 27 subjects and propositions that had been received. There was some discussion as to whether the subjects to be selected were to be approved by the Board and whether a member cannot send up his proposition without the approval of the Board.

The Chairman explained that it was not intended that the Board should adopt a resolution as its own on a full consideration of its merits before it could be sent up to the Conference, but it was sufficient if the Board was of opinion that the subject was fit to go for discussion before the Conference.

Resolution 2.—It was finally resolved that the following three subjects be selected for being sent up for discussion at the ensuing session of the Conference and that the Chairman might select a fourth subject in consultation with the Director of Agriculture, the Live-Stock Expert and the Superintendent of Government Gardens:—

(1) That an *ad valorem* duty of two annas in the rupee be levied on exports of reliable cocoons, the realization being so far as possible appropriated for the encouragement of sericulture. (*By the Superintendent of Sericulture.*)

(2) That in the interests of the development of fruit culture in the State, it is essential to start a Central Nursery of fruit plants at Bangalore under the direct control of the Superintendent of Government Gardens and to revive the Horticultural School for training men in the industry and the appointment of Horticultural Inspectors for work in the districts. (*By Mr. K. Suryanarayana Rao.*)

(3) Having regard to the growing demand of fuel, more favourable terms than what are offered in the Revenue Rules for planting fuel trees (Appendix H, to the Revenue Rules of 1890) may be offered to encourage planting of fuel trees, if possible, by suitable subventions. (*By the Mysore District Board.*)

5. *Programme for 1922-23.*—The programme, copies of which had been circulated among the members previously, was discussed item by item and adopted with certain modifications.

Resolution 3.—Resolved that the programme as finally approved (*vide* Appendix) be sent up to the Economic Development Board.

The meeting then terminated as it was past 6.15 p.m.

MIR HUMZA HUSSEIN,
Chairman.

Bangalore,
17th May, 1922.

D. C. SUBBARAYAPPA,
Secretary.

Leaders in Finance and Industries.

CHARACTER SKETCH OF THE MONTH.

Sir G. L. Molesworth.

In an interesting article, the *Westminster Gazette* says :—

It is not by any means Sir Guilford Molesworth's only distinction that he is the most active and vigorous of nono-genearians — a man who, at the age of 86, became a volunteer as soon as the red armlets were served out early in the war, and insisted on going into the Vickers works at the Crayford when his doctors protested against his martial activities. He has been prominent in his time as a bi-metallist, as an advocate of decimal currency, as a Tariff Reformer, as the author of a work denouncing what he calls "The Curse of Socialism," and in many other capacities to which his superabundant energy has attracted him in the years of his 'retirement.' Before this, however, he was one of the most prominent of engineers, and the railway systems of India and of Ceylon owe very much to his knowledge and skill. His career has been so long and his experience so great that a very full and detailed account of his life will be demanded one of these days, but in the meantime a smaller biography, which E. J. Molesworth has edited, will prove a welcome substitute. ("Life of Sir Guilford L. Molesworth, K.C.I.E., The Nestor of the Engineering Profession." (Spon.) 5s. net.)

A LINK WITH THE PAST.

It is doubtful if anybody but Sir Guilford can claim as he does in the pages of "memories" which form the major portion of this little book, to have seen Prince Albert "when he spent a day in Canterbury as he was posting from Dover to marry our Queen." That, of course, was in his school days; but he is old enough to remember the railway mania, and to recall the fact that only just before he started his technical studies "the demand for surveyors was so great that some of the senior students were engaged to survey prospective railways at five and ten guineas a day." At the time of the Crimean War he was sufficiently competent to accept an important appointment at Woolwich Arsenal, but even in those days the difficulties that a civilian expert experienced in working under military control proved too much for him and led to his resignation.

He spent several years as Consulting Engineer in

London, and had the usual experiences in dealing with inventors. He says :—

There was at that time at the Patent Office a very suggestive object lesson : On each side of the entrance there was a door ; one bore the brass plate of "The Commissioner of Bankruptcy," whilst the other bore that of "The Commissioner of Lunacy."

Then he went to Ceylon as a railway official followed by his wife and children, in a sailing vessel. "The route they travelled," he writes, "was round the Cape, which was then a four months' voyage, and a most tedious affair. Though everything was said to be provided, there were many deficiencies. There was no stewardess on board, and no proper facilities for families. For instance, the children had to be washed in a pie-dish." He, himself while he was in Ceylon, had an adventure in driving a train with the future King of the Belgians on board. "When on a steep gradient and curve," he says, "I saw to my horror, that the natives had placed a number of large stones on the rail . . . there was no time to stop. So, I threw open the regulator, and dashed full speed at the obstacles, which to my great relief, were scattered in all directions without derailing the train."

A SOLDIER STORY.

From Ceylon he went to India, and came into close contact with the officer who was to become Lord Roberts. He was one of the first Europeans to march right through from Tonghoo to Mandalay, with fifty men of the Somerset Light Infantry for his escort : and of these he writes : I had no difficulty in getting them to keep up with me. Sometimes when I suggested that my projected day's march might be too far for them, they replied : "Oh, no, Sir. If it were ten miles further we would do it." In fact it was known that there was beer at Kionksai, about 12 miles from Mandalay, and they hadn't tasted beer for months. Sir Guilford had been, nominally at least, in retirement for sixteen years when he became President of the Institution of Civil Engineers ; and in his Presidential address he recalled the days in which "the prefix, 'civil' to an engineer seemed rather absurd to the general public. . . . when the engine-driver was called the engineer, . . . and we, students of the College of Civil Engineers were called Polite Stokers by the man, or rather the boy, in the street."

The Delhi University.

Dr. H. S. Gour says : My plan of Delhi University is very different to the conventional plans hitherto exhibited for Universities in India. We have at present three Arts Colleges and one Women Medical College. But we have in Delhi, or for that matter at the head of Imperial capital, whatever it may be, the possibility of creating a great Imperial University, to train up young men in vocational and professional subjects for which we draw at present men from foreign countries. I think a beginning should be made when our University should train up indigenous staff in subjects like wireless, electricity,

railways and general engineering, architecture, commerce, painting, sculpture, and music, etc., and thus make India self-contained. I am striving in that direction, but I am not ignoring the literary side of University. But here again my plan is to train the mind and not the memory. We have therefore to train up the University *Alumni*, both in what the Germans call "Broad Studien" as well as to impart culture and refinement which sweetens and ennobles life. India must progress in all directions and its educational institutions must be worthy of its coming greatness.



Mainly About Persons.



Colonel Tennant.

Mrs. Asquith's nephew, Colonel John Edward Tennant, who is known to a good many people in India has made £500,000 by financial operations in the City. He has had an extraordinarily adventurous career.

He started off as a midshipman in the Navy and just about when he was to be made a lieutenant he left the Navy and joined the Scots Guards. Early in 1914, having tried the sea and the land, he took out a pilot's air certificate, with the result that when war broke out he was mobilized on Salisbury Plain with other pilots who had qualified. He crossed to France in 1914 and had good luck until January 1915, when he was brought down by "archie" fire, but although badly wounded he managed to land his wrecked machine behind the British lines. Subsequently he went out to the East where he was Director of Aeronautics on the three fronts round Mesopotamia and also in India.

While there he wrote a book describing his experiences called *In the Clouds above Bagdad*, and shortly afterwards was shot down by the Turks. The Turks took him prisoner, but seven days later he escaped and went to India, arriving in a very bad state of health, brought on by hardships and privation. He soon recovered, however, and married the daughter of the Chief of the Staff.

At the end of the war he left the Army with the rank of full Colonel, and subsequently invaded the city with the astonishing success reported above.

Mr. Penny.

An inquest was held at Brighton, on Mr. Clifford Ernest Penny, who prosecuted nearly 50,000 profiteers on behalf of the Ministry of Food, who was found dead in the bed in an apartment house in Manchester Street, Brighton, with a tube attached to a gas bracket in his mouth.

Mr Penny, who had been living at a boarding house in Clanricarde-gardens, London, W. 2, went to Brighton and left a note in which he was one of the thousands of workless and penniless men.

Mr. Penny's most brilliant work was accomplished during the railway strike of 1919. It has been said that it was the marvellous transport scheme which he evolved that broke the strike. One of his colleagues who worked with him at that time in his headquarters at Regent's Park said that for weeks he never went to bed.

He had a genius for organizing transport. In his little office he had a table resembling a genealogical tree, and poring over these various lines of lorry transport he saw that no department went unprovided for. The rest of his time was spent in visiting every corner of the country during that strenuous period.

He never said anything about his own work, however, and more often than not other people were given the credit for the work that he so quietly did. Later

he went to the Board of Trade's Food Department, which he left about a month ago owing to departmental economy.

Mr. Penny had nearly nine years of public service to his credit. He joined the Royal Army Service Corps in 1914, and being invalided out within a few months, he volunteered for the Civil Service.

A verdict of suicide while of unsound mind was returned.

Death of Herr Hue.

The death is announced in the Easen Hospital of Otto Hue, the well known miners' leader. He was to have been once of the labour exports in the German Delegation at Genoa, but he fell ill with inflammation of the lungs shortly before the Delegation was finally chosen.

He was born at Horde, in Westphalia in 1862 and was by trade 'a miners' blacksmith. While working for Krupps he edited for sometime a miner's newspaper at Bochum. Subsequently he became a Trade Union official, and spent the rest of his life in trade union and political affairs.

He was one of the more moderate of the miners' leaders, thanks principally to his remarkable knowledge of economics and the labour conditions of the German mining industry. Owing to his moderating influence and sound leadership he was much respected especially by the older men, among whom he occupied a position somewhat similar to that which used to be held by William Abrahams (Mabon) in the South Wales coalfield. He was an opponent of the strike except as a weapon to be used in the last resort.

His trade unionism was practical as well as political, and it was largely due to his telling advocacy that the German miner obtained greater protection against accidents. This was not achieved without opposition however, and he was frequently fined, and once sent to prison for offences against the Press Laws.

Hue was a member of the National Assembly of Weimar, and was a member of the Reichstag and the Prussian Landtag at the time of his death, sitting as a Majority Socialist. He frequently served on commissions and at conferences, two of his notable appearances in this capacity being at the Coal Conference at Spa and on the socialization of Coal Committee. He was a fluent and ready speaker, but there was nothing of the demagogue about him.

The production of sulphur in Sicily was 120,000 tons in 1860, 538,534 tons in 1905, 181,374 tons in 1919, and 219,844 tons in 1920. Exports totalled 230,869 tons in 1918, 147,755 tons in 1919, and 190,175 tons in 1920. The figures for 1921 are not yet published. In order to increase production and export of sulphur, the formation is proposed of a new company on the lines of the old Anglo-Sicilian Sulphur Company.



Books in Brief.



SHORT REVIEWS OF RECENT BOOKS.

The Law and Principles of Co-operation.

By H. Calvert, I.C.S., Registrar of Co-operative Societies, Punjab, Second Edition, Messrs. Thacker Spink & Co., Calcutta.

We welcome the second edition of Mr. Calvert's work, because it presents itself in a new form. Mr. Calvert is not a mere enthusiast in this department of study; he is also a serious thinker in its various practical aspects. His critics of the previous edition he confounds by sticking fast to what he said in his last edition, especially in regard to illustrations. The general chapters and the introduction ought to make the book highly valuable both to the Department of Co-operation in the various Provinces of India and to non-official workers in the field. The Act has been carefully annotated and references given to various co-operative Manuals, Reports, etc. Altogether the book in its new form deserves the widest circulation possible in India.

The Economics of Reparation.

By J. A. Hobson. Published by Messrs. George Allen & Unwin, Ltd., Ruskin House, 40, Museum St., London, W.C. 1. Price 1s. net.

The author of "Problems of the New World" and "Democracy after the War" has a right to speak, as it were, on the *Economics of Reparation*. The more so as he was selected Chairman of the Peace Revision Committee of the Fight the Famine Council. Mr. Hobson's views are, in our opinion, perfectly sound and have been loudly repeated in several responsible quarters during the past six months and more. "The only way," he says, "in which any substantial reparation can be got is by adopting a policy expressly directed to restore Germany as soon and as completely as possible to the highest pitch of production and the fullest liberty of foreign trade to which her injured and diminished natural and human resources are capable of attaining." What this sound policy of reparation would actually involve, Mr. Hobson enlarges in this brochure, to which we invite general attention, as it is both informing and suggestive to a degree.

The Elements of Social Justice.

By L. T. Hobhouse, D.Litt., LL.D., Martin White, Professor of Sociology in the University of London, Published by Messrs. George Allen & Unwin, Ltd., London, W.C. 1.

Any book by Professor Hobhouse is bound to command general attention. A work like the present one, devoted to the social application of the ethical principles enunciated by him in his much admired philosophical publication "The Rational Good," would be welcomed if for nothing else at least for the reason that it forms a continuation of his earlier work. How far the present work is really related to the other one named above will be clear to the reader when he peruses the first chapter of this work. Though the

deductive method is largely employed by Professor Hobhouse in the treatment of the subject, still it is, as may be expected, kept within limits. A rare intellectual treat from a humanist of outstanding merits. We cordially commend the volume to our readers, for it is both thoughtful and stimulating.

Intensive Farming in India.

By John Kenny, Late Director of Agriculture, Hyderabad, Deccan, published by Messrs. Higginbothams, Ltd., Madras.

This is the third edition of the book revised and enlarged. We reviewed this practical work at length when noticing the second edition issued not long ago. That a new edition should be called for of it within so short a period shows it fills a desideratum in our agricultural literature. Mr. Kenny is cautious in the matter of the recommending of implements of a new type. This is as it should be. Improvements are good; but improvements must be proved first and then recommended for adoption. Mr. Kenny's work is growing and we should be glad, if he keeps this in view, when issuing the next edition of his deservedly popular work.

New Commercial Atlas.

Messrs. Geo. Philip and Son, Limited, have issued a new Wall Atlas of Commercial Development which aims at presenting in graphic form a clear and comparative picture of the economic conditions of the globe. The maps are complementary to the physical, climatic, and political geography series issued by the same firm. The maps have been compiled in such a way as to present, in a diagrammatic form, appealing directly to the eye, a general view of the activities of mankind in the production and distribution of commodities; that is to say, each map gives a kind of picture exhibiting in its broad features the stage of commercial development actually reached in the region it depicts.

The use of symbols is restricted to the locations of actual workings of characteristic mineral products such as, gold, silver, tin, petroleum, etc.; while the areas of important coalfields are outlined, since the existence of coal is essential to so many kinds of industrial enterprise.

Special prominence is given to the great highways of commerce — on land by rail, navigable waterways, and in certain poorly developed regions by caravan; and on sea, by steamer. Railway and steamship distances alike are given in statute miles, while the comparative volume of sea-borne trade is indicated diagrammatically by showing the ocean channels of trade in blue bands varying in width according to their importance.

The present series consists of the following eight maps: World — occupations, transport and communications; Europe; British Isles; Asia; Africa; North America; South America; and Australasia, showing the commercial development.



From our Readers.



All-India States' Conference.

It is proposed to hold an All-India States' Conference in Bombay in August or September next, for the purpose of considering questions affecting the subjects of Indian States throughout India. It is earnestly desired that it should be attended by as many representatives as possible, of every State in India, and therefore, it is hereby requested that all those who take interest in the cause of the States' subjects, should communicate on the address given below, with the Secretaries of the Provisional Committee of the Conference to make the Conference a success. The Secretaries wish particularly to be favoured with (1) the names of the prominent people in all the different States, who may be requested to join the Recep-

tion Committee, (2) the names of men who are likely to attend the Conference as delegates, (3) suggestions in regard to the subjects to be brought for discussion in the Conference, etc. More particularly they would like to receive papers, to be read at the Conference, on the public grievances of the subjects of various States, so that the Conference will be able to take conjoint action on behalf of all the States. All Communications should be addressed to the Secretaries, Provisional Committee, All-India States' Conference, Kibe Wada, Budhawarpet, Poona City.

D. B. SHUKLA, Bar-at-law, Rajkot, <i>Chairman</i> .	N. C. KELKAR, Poona. S. S. MEHTA, Bombay. P. L. CHUDAGAR,, J. R. GHARAPURE,, A.V. PATVARDHAN,,
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Principles of Retrenchment.

In view of the fact that Lord Inchcape is shortly coming out to India as the Chairman of the Retrenchment Committee, the speech he delivered the other day, at a meeting organized by the British Income-tax Payers' Society at the London Mansion House condemning Government extravagance will be of interest to this country.

"At present we are slithering down an inclined plane of prodigality and indefectness that will land us, unless we act promptly and resolutely in the ditch" said Lord Inchcape presiding at a meeting.

Direct taxation in the shape of income-tax, super-tax, corporation tax and death duties was, he said, gradually and certainly sapping our accumulated resources. He felt that if expenditure and taxation were not reduced we should be landed in national and individual bankruptcy.

As a penalty for giving expression to his views he was commanded to serve on the Geddes Committee which, after six months of strenuous work suggested economies of £87,000,000 in the public spending departments and told the Government that another £13,000,000 could be saved without difficulty and without impairing efficiency.

But the heads of spending departments and their officials had apparently succeeded in persuading the Cabinet to adopt reductions of only £64,000,000 instead of £100,000,000.

As far as could be seen the revenue for the current year even at the present rate of taxation, would be equal to the expenditure.

JUGGLING WITH FIGURES.

By juggling with figures and bringing into revenue realizations from sales of surplus stores and ships, and by annexing the post office surplus, which ought to be devoted to cheapening communications, the Government might be able to present a balanced budget but no one knew what would happen in 1923-24 when they would not have such things to help them and when three years of low average of income-tax would materially reduce the returns.

He had not the slightest objection to a reasonable

amount of direct taxation but if virtually the whole result of individual effort, hard work and frugality were to be handed to the spending departments all incentive to saving must disappear.

"We have incurred a debt of about 8 thousands millions," continued Lord Inchcape. The interest on that must be paid. We have war pensions and other obligations which we must in honour discharge. In the boom of 1919 we added considerably to old age allowances. We thought that having won the war we were in for an era of unbroken prosperity. It was not only the Government who lost their heads but the mercantile community, the working classes and the people generally all got carried away.

Now we have awakened to the reality and we have got to face it. Sir Erie Geddes realized it. He worked like a galley slave to get the Government out of its difficulties. In August last the Government launched the National Expenditure Committee on its voyage of discovery with Sir Erie as skipper and with sailing orders to arrive at a cut of one hundred millions. The task of navigating the ship to harbour was no easy one. A good deal of head wind was encountered and 'All hands on deck and bout ships' were frequently the orders of the day.

MANIPULATING THE LOG.

"After a hard beat we at last reached port. When our log book was handed to the Chancellor, we were assured our labours would not have been in vain. The Government, however, having got our report, whittled down our considered recommendations by 230 per cent.

"The question is 'Is the country willing that this vital issue of economy should be made foot-ball either of party politics or of departmental price and intrigue.' It is up to the entire nation to press for and insist upon drastic reductions on expenditure.

If you side track this matter or treat it as of secondary moment, then in my judgment you are done.

Even worse than the present burden would be any attempt to lighten it by short-sighted and cowardly finance and he sincerely trusted that no attempt would

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The Problem of Modern Democracy.

By Dr. A. T. Hadley, President Emeritus of Yale University.

The central problem of modern democracy was to secure an industrial *moral*, which should serve the Commonwealth in times of peace as effectively as its military *moral* had served it in times of war. It was the popular opinion that democracies were essentially peaceful and not much fitted for fighting or military discipline. But history was full of records of the defeats of large monarchies by small democracies. Monarchies had always made the mistake of thinking that democracies would not fight because they would not incur danger, or submit to discipline. Democracies would submit voluntarily to military discipline in emergencies created by national peril. But would they submit to the same discipline in time of peace, and accept the burden of working as they accepted the burden of fighting? A free people would rise to meet emergencies, but could they be trusted to foresee and prepare for them? Could they be depended upon to put themselves under the guidance of experts in business and science?

Setting people to work together voluntarily side by side as Democracies had fought together side by side depended upon the past training of the people in the ethics and practice of citizenship. Our statesmen to-day, in England and America, must make use of applied psychology, quite as much as applied economics. They had not only to decide which was best for a nation in given circumstances, but to make the people, or the majority of the people, see that it was the best. To accomplish anything substantial the statesman must be able to enlist either the self-interest or the public spirit of an organized majority to support him in his measures. That was the distinction between a statesman and a doctrinaire. Whether he could make the people see things as he saw them depended

upon their political training.

Each nation saw that this was true in its own case. The Englishman knew the limitations under which Mr. Lloyd George worked better than he understood those which hampered M. Briand or M. Poincare in France and Mr. Wilson and Mr. Harding in America, and he was in danger of thinking that foreign statesmen failed to see their duty when they simply could not make their fellow-citizens see it. America was similarly ill-informed about the conditions which confronted Mr. Lloyd George, and was in similar danger of misjudging him. Each nation made proper allowance for the difficulties under which its own statesmen worked, but could not make similar allowances for those of other countries. It had a double standard of judgment—a theoretical one for others, a practical one for itself—and such double standards were perilous.

If that were true, he should best contribute to an understanding between these two great countries if he treated economic problems as primarily educational problems. The acquisition of knowledge was not the end of education, and not the largest or most important part of it. The chief end of training in the schools and in after life was the development of habits of discipline and self-command, of powers of hard and efficient work, of ideals of duty which would lead a man to sacrifice present pleasure for those of other countries. It had a double future honour and personal advantage for the public service. The question of how to train people to meet the conditions which confront them was even more important, in the economic problems of to-day, than the question how to shape conditions to meet the needs of the people.

The Levy of the Education Cess.*

By Dr. Brajendranath Seal, M.A., Ph.D., Vice-Chancellor, Mysore University.

I must premise that the question of educational finance on which our discussion of this Proposition at the (last Mysore Economic) Conference turned is a vexed and complicated one. Still, certain principles seem to have emerged more or less clearly in the general History of Education. Of the various grades of national education, the secondary grade above the compulsory level will ordinarily depend on voluntary contributions in the shape of fees and endowments, though, even under this head, model and normal schools and polytechnics must be maintained by the State, and a grant-in-aid system as well as a liberal provision for scholarships are necessary adjuncts. Central Institutions, like Universities, State-chartered as they mostly are, must look for support to the common central exchequer of the State, replenished, it may be, by munificent endowments. For, Universities now-a-days are national organs for mobilizing the man-power of a people in the international struggle and the international co-operation. Lastly, mass education, if it is to be compulsory and free, must be maintained by the income from local cesses levied by local bodies and eked out by State subvention. But whether the cost is met directly by the State, by the individual, or by the constituted local authority, it comes in reality from the one original source, the economic income of the people,—which, in our present industrial economy, is mainly and ultimately an income from land. It is only the distributing agency that differs in the different cases,—the fund is the same. In this distribution of the cost, the main questions that arise are the following: (1) the apportionment between voluntary and compulsory contribution, or between private and public sources, (2) the extent of financial devolution to local units as against Central State financing, and (3) the incidence of the tax or cess on the different kinds of income. A sound policy of educational finance and educational expansion levies, cesses, surcharges, differential rates on those sources of the national (or local) economic income which grow with the growth of education.

For, in truth, a sound educational system has this self-reproductive virtue. It develops the people's efficiency and the people's economic

income, which in turn promotes the educational development.

Here in Mysore we levy a cess on excise in addition to the cess on land revenue, and it is a matter for consideration, how far other ways and means such as of differential rates of duties on the consumption of luxuries or goods of finer quality supertaxes on certain grades of Income or of profits, and even surcharges on fares or freights, a tax on public amusements, a small rate or cess on royalties from mines and forests, may be availed of for the purpose of financing mass education.

There is great room, again, for social propaganda for diverting to the uses of mass education a part of the people's expenditure on various kinds of unproductive consumption. Customary grant to the village school fund on social and domestic occasions may be initiated with the help of Village Panchayats and other rural and urban agencies. To these might be added customary offerings, in the nature of Vritti and Zakat, which, as ordained by a religious or social code, were once in vogue and may still be revived.

In dealing with the question of the cess, gentlemen, I wish to place before you certain facts relating to the Education Budget. From certain statements that have been placed before me by the Assistant Secretary, Mr. Rama Iyer, it appears that Government during the last septennium have been increasing every year the percentage of the revenue devoted to primary and secondary education. The University grant, I may note in passing, has been moving in the opposite direction, having suffered a 36 per cent. reduction in the course of two Budgets. The total expenditure on education (excluding the Village School Fund cesses) has risen from 26 lakhs in 1916-17 to 40 lakhs as estimated for 1922-23, and the proportion of the total State revenue spent on education has gone up from 8 to 13 or 14 per cent. Gentlemen, you will be interested to learn that, of all Governments in India, Mysore shares with Cochin and Baroda the distinction of spending on education the highest percentage of the revenue (13 or 14 per cent). Coming now to primary education, you will find that here in Mysore the expenditure under this head has doubled itself during the last septennium. But the most significant fact in this connection is the insignificant

* Speech made at the Mysore Economic Conference, June 1922.

fraction which our local or municipal funds contribute to this expenditure.

In British India, the contribution from local funds is about two-thirds of the grant from the State, in Mysore, it is one-fifth under the most favourable construction. Further the Education Acts in the British Indian provinces provide for local cesses whenever compulsion is to be introduced. Here in Mysore compulsory education is maintained entirely from the State revenues, and the relative positions of central and local taxation, are entirely reversed. You want State compulsion in (educational) finance, and local Self-Government in polity and control. The position is an impossible one, and is constitutionally unsound.

Gentlemen, I would earnestly appeal to you to consider the situation thus revealed. Members of this House, the people's representatives, I am glad to note, keenly realize the urgency and importance of the educational expansion outlined by the Government in the orders on the Education Memorandum. But the present financial conditions,—allowing for the amplest retrenchments practicable,—do not admit of further allotments from the State. Some indeed have hinted at the good old plan of robbing Peter to pay Paul. They seem to have found an Eldorado in the University, but alas! things are not what they seem! But whether it is an Eldorado or only a Naboth's vineyard that they covet, the confiscation would not bring more than half a lakh to a budget of 40 lakhs for all education and 14 for Primary. To cut off the University and leave the educational system of Mysore a headless trunk may be a 'capital' stroke—some low invertebrate organizers survive the operation and wallow in the slush but, as I have just pointed out, it would bring no 'capital,' or no more than half a lakh, unless indeed all the Colleges, and all the Collegiate Schools as half-way houses in a *cul-de-sac*, should also be abolished at the same time and with them all modern progress and social efficiency of the people,—a proposal which may be coming but has not yet arrived in this year of grace. It behoves us therefore to consider whether other ways and means cannot be found elsewhere than in the exchequer of the State.

The apprehension that found expression in this House that the proposition as amended contemplated the introduction of compulsion in the levy of the cess was groundless. Compulsion in these matters may come after

constitutional reform from an elective Legislature or popular House, and even under Representative Government, there is usually the question of devolution or decentralization, so that primary education may be provided for by local taxation, under local option or autonomy, and not from the State revenues. Here in Mysore, we have a local self-Government act, and the devolution of educational finance has been accepted in principle: there is no going back on this delegation of authority. Others objected to the cess as a burden on landholders, and would therefore retain the present restrictions on its imposition. Whether the burden could be shared between land and other sources of income (besides excise) is a distinct question which may be considered in the Legislature, and I have already offered a number of suggestions on this point. Others again want to hear the real voice of the people in the pronouncements of the local bodies, and hold that two 'three-fourths' majorities like a double sentry are a safeguard against official ventriloquism. But why other forms of majority, say a two-thirds majority, or a bare majority, or a majority of the members present, or finally a majority after two or more considerations or references, should not be binding upon the minority has nowhere been explained.

What the proposition even in the amended form aimed at was the simplification of the present procedure for the levy of the cess, a procedure which really frustrates real local autonomy and perpetuates an undemocratic tyranny of the minority over the majority; it is a matter for consideration.

(i) whether there should be two majorities consenting to the cess as now provided;

(ii) whether granting that there should be such a consent twice over, the majority of 75 per cent. cannot be reduced;

(iii) whether each Taluk Board which is a local Self-Governing body with separate funds may not be treated like a Municipal Council and permitted to raise a cess in its area.

Sec. 26 (a) and (b) of the Local Boards Regulation give Taluk Boards authority similar to that of District Boards in section 24 (a) and (b). If the Taluk Boards are given power similar to what is conferred on District Boards in Sec. 24 (c), the procedure for the levy of the cess might be simplified considerably. Again, two possible objections to the system of levy now authorized are—

(1) that the cesses raised are not ear-marked for improvements in the particular District.

(2) that control over primary education is not transferred to local bodies.

It will however be found from a careful examination that the first principle has been accepted indirectly in the following passage in the orders on the Education Memorandum :

"In areas where the Boards or Councils do not raise the cess to meet the expenditure, the programme of development outlined in the foregoing paragraphs will be curtailed to a corresponding extent."

The latter principle, that of local management, has always been kept in view by Govern-

ment. It has been actually sanctioned in the case of certain Municipalities as a sort of first instalment, and has been postponed in the case of Local Boards only till the complicated scheme of reforms is carried out.

In saying all this, gentlemen, I would not be understood to dogmatise on the question how or where the additional burden should be placed. But new ways and means have to be found. A sound education is the most productive of investments for any State or people—it produces the producers, it creates efficiency, vitality and free personality.

Morality in Commerce

Mr. P. A. Best (Senior Manager to Messrs. Selfridge and Co.) gave a lecture recently to teachers at the Regent Street Polytechnic on "The Romance of Commerce", which he began by tracing the part which the Phœnicians and the Greeks had played in the development of trade. He regretted that the historians of Greece had not done justice to its commerce, which must have helped so materially in the creation of its world-wide culture. Plato paid a tribute to it in his Ideal Republic, as he admitted it must be founded on the merchants; he spoke, too, of the shepherd "qua shepherd"—a man who took care of his sheep for his love of the sheep. "I should like," said the lecturer, "to feel that our business men are 'qua business men', for their love of public service."

After paying tribute to the Venetian merchants and the old English guilds, Mr. Best said that to-day commerce was generally judged from the unlovely period of the Industrial Revolution, and not from the periods to which he had referred. When machinery was introduced, the owners seemed to have only one idea in life—to get rich quickly; and the lecturer drew a sad picture of the time which was, he said, a blot on the commercial history of our land. But the light of service had again begun to make itself seen in commercial activity, and he was glad to be able to tell them, as one who had visited the chief cities of the world, that to-day we had just as splendid captains of industry as in former times, and that the spirit of service was being revived in modern commerce. Transport, science, and invention had brought a new influence into modern commerce, and with the change in the heart of industry, the influence

of old days was being rapidly revived. The organization of modern commerce, he said, was as sound as it could be. "So that, in spite of the Industrial Revolution," said the lecturer, "modern commerce is on a sound foundation." Applied psychology was a real thing, he urged, and not something merely for the class-room. It was something that must be reckoned with in business management and the sooner it was realized what the mind of man was the sooner we should be able to prevent the great upheavals we had been suffering in the business world.

Sir Lulham Pound, Bart., who presided, introduced the lecturer, whose own life, he said, formed a romance, rising as he had from a Board School boy to his present post of Senior Manager.

At the conclusion of the lecture, when questions were invited, a teacher asked if Mr. Best considered that a pupil could safely be encouraged to enter commercial life without having to lower his standard of morality. Mr. Best replied that he could; commercial life was honest.

Stocks held in the interior of China are heavy, with the exception of industrial chemicals and hardware. German manufacturers have dumped drugs and dyes on the market. The demand for iron and mild steel bars, rods and angles, cotton and woollen piece goods at Shanghai and Tientsin is dull. The imports of cotton-mill machinery, flour mill equipment, and building materials is increasing. The principal exports now moving are raw silk, egg products, bristles, skins, wood oil, peanuts, lace and China teas, a large portion of the trade being with the United States.

India's Prosperity—Mechanical Engineering.

By Sir Alfred Chatterton.

The educated young Indian does not take kindly to mechanical engineering and the great group of industries which may be classified under this head is almost entirely under the control and direction of Europeans or Americans. The reasons for this are set forth at length in the Report of the Indian Industrial Commission and proposals are made to create adequate facilities for the training of mechanical engineers in a way which it was hoped would make the initial stages more attractive to the students of the High Schools and Colleges of University rank. Something has been done to carry out these recommendations but to nothing like the extent that is urgently necessary to render the country less dangerously dependent on foreign sources for the equipment of the very highly developed system of secondary industries which has in recent years been firmly established. Time and again of late, the weakness of our military position in respect to the manufacture of munitions of war in the widest sense of the term has been pointed out; but it is equally necessary to emphasize the disadvantageous conditions under which we now labour in being compelled to export our raw produce to pay for the essential requirements of our industrial life. The demand for what we can supply to the outside world has fallen off owing to the disturbed condition of Europe and the general lack of purchasing power consequent upon the impoverishment caused by the war. For a long time, the balance of trade has been seriously against us with the result that our credit has diminished and the exchange value of our currency depreciated. If we cannot find a market for our goods, we must import less to the detriment of our future progress. It would be very different if we were more self-contained. It is in the engineering trades that our deficiencies mainly lie and all other industries are kept back by reason of the fact that they are dependent on foreign workshops and manufacturers.

The sea-borne trade returns for 1921 throw a good deal of light upon the present position. Our imports of iron and steel, of machinery, of railway material and of motor cars were valued at Rs. 80 crores and we spent a further five crores on coal. To these figures we may add another Rs. 25 crores, the cost of importing 663,000 tons of sugar, an expenditure which would have been unnecessary if in

the handling of the cane crops, modern mechanical methods were employed.

It is true that both cast iron and steel are now manufactured; but the weakness of the position is indicated by the fact that 54,000 tons of pig iron were exported to Japan whilst 34,000 tons were imported chiefly in the form of castings which ought to have been locally made. Further, great developments in the manufacture of iron and steel are under way and strenuous efforts are being made to establish the subsidiary industries which will work up the pig iron and the output of the rolling mills into finished goods ready for the use of the consumers. All this is very much to the good; but the Indian is not playing a very important part in the technical side of the work; his concern is chiefly with the business organization and finance. Of necessity, he must rely upon imported experts for the present; but it should be a matter of serious moment to him to see that everything possible is done to provide in the future expert technologists and engineers from among his own countrymen.

We must assume that the disinclination of the young Indian to mechanical pursuits can be overcome. It is all a question of creating the proper atmosphere. It is not so long ago that all forms of manual work were looked upon as degrading; but that prejudice has gradually disappeared and it now only remains to secure recognition that a long course of training in workshops is essential to any one who would aspire to attain a high position as a designer or a manufacturer of machinery. The real difficulty in attracting a sufficient number of suitable apprentices in the engineering workshops that now make provision for their thorough training is the lack of definite assurances regarding the prospects of the subsequent career. But even this aspect is of diminishing importance as the stress of competition has plainly revealed the limits of the privileged services and the slowness of promotion. We may take it, therefore, that a supply of mechanical engineers will be forthcoming as soon as there is a steady and insistent demand for their services. That there is not such a demand at present, is due to the relatively small extent to which Indian capital is invested in mechanical engineering and the ease with which fully trained and experienced engineers can be induced to come to India.

The mechanical engineering due to private enterprise in India to-day is almost fully protected from foreign competition; for it is mainly concerned with maintenance work which must be carried on in close proximity to the industrial undertakings upon which it depends. There is no real competition and therefore no particular incentive to a high state of efficiency or low costs of working. It is practically certain that no extensive developments on the manufacturing side can take place unless they are protected by a high tariff. The evidence tendered to the Fiscal Commission and the recent action of the Legislative Assembly at Delhi in throwing out the proposals of the Finance Member to increase the duties on imported machinery show that there is at present no long view taken of India's industrial future. Every one wants to buy his own requirements in the cheapest market and whilst not averse from a measure of protection for the industry in which he is engaged, is distinctly opposed to any policy which would compel him to pay more for the equipment of his mill or factory. There is sound common sense in this attitude as the tariff would at present merely obstruct enterprise in one direction without encouraging it in the other. The success which has attended the operations of the two companies producing iron and steel in India and the fact that other similar works are under construction seems to clearly indicate that the conditions in Bengal are sufficiently favourable in regard to raw materials and labour to enable them to hold their own against imported iron and steel

whether of European or American origin. But so far only pig iron and rolled sections have been turned out and it by no means follows that subsequent advances in manufacture will be quite so favourably placed. New industries starting in India are handicapped at the outset by the lack of skilled labour, by the prejudice against country made articles, by the high overhead charges due to the cost of European supervision and not infrequently added to all these are heavy costs of distribution. At the beginning, production cannot be on a large scale and only when there are obvious advantages in the shape of cheap raw material and big markets is there any hope of success in competing with the output of highly specialized factories elsewhere. Protection, therefore, is a necessary accompaniment of any attempt to develop mechanical engineering; but the prospects of anything more than a revenue tariff are not bright. The cry for protection is not the outcome of any serious study of the economic conditions prevalent in India and I think it may be safely stated that the Fiscal Commission now engaged in preparing their report is the first detailed examination of the question. A policy of protection involves considerable sacrifices on the part of the community and it is very doubtful if this is fully realized. Certain provinces will benefit at the expense of others and it remains yet to be seen whether there is a sufficiently highly developed sense of unity to secure anything approaching unanimity in the practical application of tariffs to the industrial development of India.

Press and Newspaper Acts.

Act No. XIV of 1922 which replaces the Indian Press Act of 1910 and the Newspapers (Incitements to Offences) Act of 1908 declares:

" 'Editor' means the person who controls the selection of the matter that is published in a newspaper."

" 'Newspaper' means any printed periodical work containing public news or comments on public news."

The following section is also inserted, namely,

"If any person, whose name has appeared as editor on a copy of a newspaper, claims that he was not the editor of the issue on which his name has so appeared, he may, within two weeks of his becoming aware that his name has so been published, appear before a District,

Presidency or Sub-Divisional Magistrate and make a declaration that his name was incorrectly published in that issue as that of the editor thereof."

"The printer of every newspaper in British India shall deliver at such place and to such officer as the Local Government may, by notification in the official *Gazette*, direct, and free of expense to the Government, two copies of each issue of such newspaper as soon as it is published."

Owing to the temporary stoppage of navigation in the Baltic due to ice, large quantities of goods, especially paper, have accumulated at Hango and Abo.

Work at Pusa, 1920-21.

By "Viator".

For some years after the Agricultural Department was reorganized on modern lines by Lord Curzon, the research work at Pusa overshadowed that of the Provincial Agricultural Departments. It was only natural that it should be so, for, at that stage of development, the staff at Pusa possessed the higher qualifications and the greater experience. Now, as the lengthening roll of members of the Provincial Departments who are Doctors of Science of the most famous British Universities testifies, there is but little to choose in the matter either of qualifications or experience. The result has been that the pendulum has swung too much the other way and that the work which is being done at Pusa does not receive the attention it deserves. One reason for this is inherent in the character of the work. It is, in the main, of so highly technical a character that it is impossible to present its aims and results in a form in which they can be readily grasped by the general public. The label which is attached to the annual report "Scientific Reports of the Agricultural Research Institute, Pusa" is intended to keep all but the expert away from its pages and those who wish for a "popular" description of what is being done at Pusa must look for it in the references which are scattered through the pages of the Agricultural Adviser's annual review of agricultural operations in India. That publication we hope to notice in these columns shortly but meanwhile Pusa deserves a few paragraphs to itself, for it remains as true as ever that no one interested in the agricultural development of India can afford to ignore the work there.

Last year may be described as a year in which steady but quiet progress was made in the collection of material but in which nothing very striking was achieved in the way of results. This is especially true of the Mycological and Entomological Sections. The former was mainly engaged in the study of Helminthosporium in cereals and sugarcane, of diseases of paddy caused by *Piricularia* and of immunity of thick sugarcane to smut diseases whilst the most important work of the latter was the investigation of borers in sugarcane and other graminaceous plants. Borers are much the most serious insect pest of sugarcane in India, causing as they do great damage to the young crop almost everywhere but especially in

Bihar and the submontane tracts of the United Provinces. It cannot be said that the Entomologists at Pusa have progressed very far in devising satisfactory methods of control to check the damage done. Work in 1920-21 merely confirmed previous experience which had shown that thin varieties of cane possess greater immunity to borer attacks than thick ones and that, as canes grow, the virulence of the attacks generally and gradually diminishes. Progress is very slow for the number of species involved is large and these differ greatly in habits, in distribution and in their predilection for alternative food plants. Everything which is said in the Report about borers goes to show that the Indian Sugar Committee were thoroughly justified in their recommendation that an additional Entomologist should be appointed to Pusa whose energies should be primarily devoted to work on this pest. Of other entomological work, mention need only be made here of the bad attack by Aphids on an experimental crop of wheat which was checked in a few days by the liberation in the field of a large number of Coccinellid beetles collected from other wheat areas on the farm and of an attack of Red Spider on jute which was controlled by spraying with crude oil emulsion and sulphur.

Mr. and Mrs. Howard, the Imperial Economic Botanists, say that, with the publication of their memoir on the wilt disease of indigo, the working out of a suitable method of selection and the discovery of an improved method of seed growing, the original programme of work on this crop came to an end in 1919. They appear to think that nothing more can be done for indigo on the agricultural side. If that be so, now that the German synthetic dye is again coming on the market in appreciable quantities, not only must the yield of the natural indigo per acre be increased by the adoption of the methods recommended by Mr. and Mrs. Howard but the losses in the manufacturing process must be reduced to a minimum, if natural indigo is to hold its own against the synthetic product. How to secure the second of these aims is a problem which is at present engaging the attention of the Bacteriological Section at Pusa and we are inclined to think that the work done under this head was the most important accomplished at the Research Institute last year. Retting water

sterilized with the preparation of the Pusa laboratories known as "E. C." after inoculation with a pure culture of Indican hydrolyzer yielded produce of the high quality of 78.5 per cent, which is considered the highest yield ever obtained in Bihar. The "E. C." preparation has been found useful in other directions, not least in the treatment of septic wounds.

We commented at the outset on the highly technical language of the Report but there is little or nothing in the section contributed by Mr. and Mrs. Howard which is beyond the comprehension of agriculturists who have not had the advantages of a scientific training. Of special interest is the account of the progress which is being made in the systematic replacement of the indigenous wheats of the United Provinces by the Pusa varieties. All over India, the local wheats are being rapidly ousted by the Pusa wheats or by varieties which have been evolved by the Provincial Agricultural Departments but nowhere has such an intensive campaign of substitution been carried on as in the Central Circle of the United Provinces. Every agency which could be utilized has been pressed into service. Co-operative societies, including not only primary societies and central banks but also agricultural supply societies formed expressly for the purpose, the Irrigation Department on the Bundelkhand canals, Court of Wards' estates and, perhaps most important of all, the private seed farms managed by the zamindars themselves, have all been employed. The quantity of pure seed available is limited and the question which arose was whether the available supply should be distributed to as many cultivators as possible, irrespective of the locality from which the application came, or should be concentrated. Apart from the preliminary distribution to test the suitability of the variety for the whole tract, the principle of concentration has wisely been followed and the object aimed at is the complete replacement of the country crop *village by village*. As Mr. and Mrs. Howard point out, the method they are following has great advantages. Large tracts in which only one variety is grown soon exercise a marked influence over the local markets and assist in building up the reputation of the variety for food purposes and in establishing a premium for it. Mixture, whether intentional or accidental, with other kinds is rendered more difficult and the danger of natural crossing is considerably lessened. The supply of pure seed available

to the Agricultural Department is, of course, increased.

It need hardly be said that the expansion of the area under those varieties of their wheats which have a well-established reputation was not the only way in which Mr. and Mrs. Howard's activity found scope. They are still searching for even better varieties and the trials of some of the new wheats obtained by crossing Pusa 6 with a strong strawed heavy yielder advanced a stage during the year. What they are aiming at is the discovery of a bearded wheat with strong straw which will yield as well as Pusa 12 under cultivators' conditions in order to meet the demand for an improved wheat for those parts of India where the crop is damaged by wild animals and birds during the ripening period. Pusa 54 is the most promising of the new varieties so far tested and on one plot gave a higher yield than Pusa 12. It is worthy of mention that the Pusa wheats are being utilized for breeding purposes in France. Professor Schribaux of the Institut National Agronomique of Paris has, by crossing Pusa 4 with Bordeaux wheat obtained hybrids which possess a very marked resistance to rust. As for Mr. and Mrs. Howard's other work, the demand for Type 28 of tobacco seed increased greatly and seed for 50,000 acres was supplied. Considerable progress was made in the isolation and study of the unit species which make up the Indian linseed crop of commerce whilst 43 maunds of selected seed of a number of promising types of gram were distributed.

Another section of the Report which contains information of general interest is that contributed by Mr. Henderson, the Imperial Agriculturist. The Pusa farm which is in his charge comprises 450 acres of arable land. Its main object is the provision of "feed" for the pedigree herd of cattle but it is also intended to serve "as a demonstration in economical and practical working of a large Indian agricultural property." Its success in the latter of these directions could be better gauged if a balance sheet were given as, if we recollect correctly, used to be the case. It must, however, be remembered that the farm can hardly be run exactly on the lines which would be followed if it were private property. The tests of the comparative merits of steam ploughing tackle and motor tractors which are being carried out at Pusa would be beyond the powers of an ordinary landholder owning a farm of this size. Mr. Henderson's verdict on the usefulness of the motor tractor

in Indian conditions, which is based on tests of the capabilities of three types, the Fordson, the Austin and the Cletrac, is somewhat disappointing. They have so far established their usefulness for subsidiary operations only. They are apparently too light for heavy work and sooner or later break down when employed on it. The cost of deep ploughing with them as compared with steam tackle is high and Mr. Henderson anticipates that the cost of renewals, spare parts and general depreciation, though it can only be ascertained accurately after a number of years' working, will certainly be considerable. He has, however, faith in the future of the motor tractor in India as he holds that, if it were possible to hold tests on an adequate scale, this branch of agricultural machinery would undoubtedly receive a considerable impetus. Recent statements in the Press seem to show that the financial obstacles in the way of holding such tests are for the present insuperable.

Pusa's activities as a cattle breeding centre deserve wider recognition than has hitherto been accorded to them. The pedigree herd has two divisions, a pure bred Montgomery herd and a cross bred herd obtained by crossing the poorer Montgomery cows with Ayrshire bulls. The Montgomery herd numbers 254 head and the average yield from its 60 cows last year was 3,787 pounds. Though this figure is steadily improving, that for the cross bred herd leaves it in the shade. The latter herd numbers 111 and its 24 cows gave an

average yield of 6,105 pounds, "Alibi," the best of them, reaching the remarkable figure of 9,722 pounds in 304 days. It would have been interesting to know what the best of the local cows can do. Mr. Henderson thinks that a strain three quarters Indian bred and one quarter Ayrshire bred, carefully selected, will give the most promising type for Indian dairy factory work.

The latest addition to the staff at Pusa is an Imperial Dairy Expert. The first holder of the new appointment is Mr. W. Smith, whose previous work under the Army Department had shown that there was no one in India better qualified for it. His time was very fully occupied in responding, in person and by letter, to requests from all parts of India for advice regarding live stock, building plans, machinery specifications, etc., and it is worthy of note that many of these came from Native States, among them Mysore. It is evident that the Maharaja takes a great interest in this branch of agricultural activity for Mr. Smith mentions that he has selected and despatched from Karachi thirty specially well-bred Sindhi cows to form the nucleus of a pure bred Sindhi herd for His Highness and also that detailed plans of new dairy building for the Palace have been supplied. It is satisfactory to see that Mr. Smith comments most favourably both on the number and quality of the animals exhibited at the livestock show at Bangalore last year.

Indian Exchange.

Mr. V. E. Hosking writes to the *Times* :—

The present would seem an opportune time to retrieve the false step taken on June 26, 1893, and to re-open the Indian Mints to the free coinage of silver in the current ratio of silver to gold, namely, 34 to 1, or thereabouts.

I am well aware of the difficulties which confronted the Indian Government in 1893, owing to the heavy fall in the gold price of silver, in their endeavours to stabilize the gold value of the silver rupee of 165 grains of pure silver, eleven-twelfths fine, at 1s. 4d. approximately, and to maintain such parity; but, inasmuch as since 1899 the £ sterling of 113 grains of pure gold, eleven-twelfths fine, has been, and is, legal tender *pari passu* with the rupee, it is, I submit, no longer necessary to attempt to stabilize the gold exchange standard rupee at 11.30016 grains of pure gold, or at 2s. in silver.

India's economic difficulties are primarily referable to the unwillingness of the Government to concede the quality of sterling to silver, even if it attains a standard fineness of eleven-twelfths (peculiar to the rupee, alone among silver coins, as far as I am aware), 37-40ths (a standard fineness, by the way, which presupposes a fixed weight of 1,718.7 grains of pure silver forming the silver pound sterling which was demonetized by the Coinage Act, 1816); or nine-tenths, the United States standard of fineness.

May I say, in conclusion, that as long ago as 1894, Mr. Robert Ewen, in the *Westminster Review*, urged that the price of gold bullion should be left absolutely unfixed, to find its own level like that of silver? His object in so urging was to compel foreign nations to take our goods instead of our gold.

Education in Bombay Presidency.

The report on Public Instruction for the year 1920-21 shows a record of steady progress in spite of the tremendous efforts that were made by the Non-co-operation Party to induce parents to boycott Government schools. The number of schools increased by 251 and the number of pupils by 43,117, although 14 secondary schools and 25 primary schools non-co-operated, and 576 students withdrew from colleges and 1,684 from secondary schools. A considerable portion of these, however, returned after a short while.

The number of pupils receiving instruction in the 13,718 public institutions in the Presidency is 9,05,000. Including private schools there are $9\frac{1}{2}$ lakhs of pupils receiving instruction in the schools and colleges of the Presidency, of whom 7,60,000 are males and 1,89,000 females. Out of every 1,000 of the male population 71 boys and young men are receiving instruction, the corresponding figure for the female population being 20.

The total expenditure on education from all sources increased from 235 to 263 lakhs of rupees, and the share of this expenditure, borne by Government increased from 54 per cent. to 57 per cent. As the provincial expenditure of 127 lakhs in the previous year rose to 150 lakhs it is clear that practically the whole of the increase was met by Government.

It is interesting to note that the expenditure from provincial funds represents taxation of about 12 annas a year, or one anna per month per head of the population of the Presidency.

In the sphere of primary education, which must always be the first concern of Government, there was a very considerable advance. The number of primary schools increased by 300 to 13 thousand, and the number of pupils in them from $7\frac{1}{2}$ to 8 lakhs. The increase was shared by all classes of primary schools, and took place in all divisions of the Presidency except in the Northern Division which was more exposed than other areas to the blighting influence of the non-co-operation movement. Even there the number of pupils increased, though not to the same extent as it might otherwise have done.

The provincial contribution to this branch of education rose from 61 to 70 lakhs of rupees mostly distributed in the shape of grants to Local Boards and Municipalities, and amounted to 66 per cent. of the total expenditure on primary education ; in the course of ten years

the cost of educating a pupil in a primary school rose from Rs. 8 to Rs. 16 and Government's share of this from Rs. 4 to Rs. 10. For all practical purposes primary education was free, as no child was kept away from school on account of inability to pay fees ; 43 per cent. of the children in Local Board schools in fact paid no fees at all, and the total fee collections were only 4 per cent. of the expenditure. In all Government and Local Fund primary schools girls were admitted free.

The question whether even those who can pay should now be given primary education at the cost of the State, and whether it should be made compulsory, is being considered by a Committee appointed for the purpose.

Secondary education was naturally more affected by the non-co-operation movement, and the total number of secondary schools decreased by 65 to 475, the number of pupils going down from 82,000 to 76,000. The progress of secondary education has for some time been hampered by the low rate of fees charged in Government schools, seeing that private persons, who might otherwise have started schools, have found that it would be impossible to keep up any adequate staff from the fee receipts and the usual grants-in-aid.

Ten years ago the cost of educating a pupil in a Government secondary school was Rs. 52 out of which Government paid Rs. 19. In the year covered by this report the cost had risen to Rs. 81, out of which Government paid no less than Rs. 51. This defect has been recently remedied and the scope for private enterprise materially increased in consequence.

The progress of Mahomedan education was on the whole satisfactory ; this community forms about 20 per cent. of the population of the Presidency and the number of Mahomedan pupils under instruction was also 20 per cent. of the total number of pupils. During the war the education of Mahomedans in Sind suffered a considerable set-back, but the lost ground was more than recovered in 1918-19, and since then progress has been more rapid.

As a result of the activity of the Argentine diplomatic representatives abroad in pushing the sale of produce, the Portuguese and Norwegian Governments are negotiating the purchase of wheat and other produce whilst the Swiss authorities are arranging to exchange Swiss breeding stock for Argentine steers.

Mat-making Industry in South India

By S. T. Moses, M.A., F.Z.S.

Conservative India has undergone rapid changes within the last few decades that "Friends of India" who visit it now after a long absence fail to recognize its old "specific characters." What with education and civilization a great change has come about even in case of the time-honoured customs and habits of the people. Intellectual renaissance was followed by a reformation in the social and religious customs of the country and a complete revolution in its industry. The changes in the social life of the people have had a far reaching effect on many cottage industries but the industry which forms the subject of this paper has been most affected. The proverbial simplicity of the Indian home in the matter of furniture is a thing of the past even in the case of middle class people. Mats have now mostly been replaced by chairs, etc., and serve only the poorer classes for sitting etc., purposes. It is only in the few pial schools that boys carry their mats, as in the other schools, desks etc., are in use. However the richer classes use very fine painted mats on special ceremonial and other occasions. The different kinds of mats used in our households are mentioned in a Tamil nursery rhyme which on translation runs thus:—"What for is a child? To run on palmyra leaf mat, to sit on date-palm mat, to roll about on rattan mat, to squat on grass-mat and to walk on all fours on screwpine mats."

The materials used in South India for mat-making are the rush, sedge or reed (*Cyperus corymbosus*), kusa grass (*Eragrostis cynosuroides*), leaves of coconut palm (*Cocos nucifera*), thin stems of rattan (*Calamus rotang*) male bamboo (*Dendrocalamus strictus*) and bamboo (*Bambusa arundinacea*), leaves of date-palm (*Phoenix sylvestris*), leaves of fragrant screwpine or calderabush (*Pandanus odorratissimus*), leaves of palmyra (*Borassus flabellifer*), Culms and leaves of the Bulrush, Cat's tail or Reedmace (*Typha elephantum* and *T. augustifolia*), fibre of aloe (*Agave americana*) and fibre or leafstalk of Plantain (*Musa paradisiaca*).

The rush or sedge or reed (*Cyperus textilis* in Coorg and *Cyperus corymbosus* elsewhere) grows on swampy grounds and low lands, tank bunds, ditches along sides of running water, river banks and beds of tanks and channels. Mat makers recognize four kinds

of grass (korai) 1. the Mani korai, the finest and the thinnest reed, 2. Vengayapu korai, a light but thick variety, 3. Kalkorai, a coarse but brittle rush found usually on the margins of ponds and 4. Uppankorai, also a coarse variety found on the banks of saltmarshes which give it the Tamil name. In many districts in South India, e.g., Godavari, Nellore, Trichinopoly, Tanjore, Tinnevely and Coorg, the rush grows wild but in North Arcot this sedge is cultivated on wet lands. Though it is said it needs as much water as paddy people do not grudge cultivating it. Each plant lives for about 10 years. The crop is harvested twice in a year.

The stalk of the reed is at first split into streaks and then sorted according to their size. They are then subjected to a prolonged immersion in water and later dried. They are now ready for use but if they have to be coloured, they are boiled with some dye in water and then again dried in the sun. The dyes used usually are our vegetable dyes though many use the cheap chemical colours imported in our markets. For dyeing the reed red either saffron or myrabolams (*Terminalia spp*) and powdered leaves of Kaya (*Memecylon edule*) are used. For black, pods of Kamilla (*Mallotus philippinensis*) iron sulphate and gallnuts are used. For yellow, turmeric and castor oil are used. But before the reeds are dyed black or yellow, they are dyed red and then treated to assume the required color.

These rush mats are woven on a low loom the weaver sitting above it. The warp is usually cotton yarn but in some places aloe fibre.

A fine mat is known by 3 qualities. The texture should be so fine as to enable the mat to be 'rolled up and packed into the interior of a moderately sized walking stick.' It should be so water-tight as to 'hold water for at least 7½ Naligais i.e., 3 hours.' It must not be brittle but after being crumpled should be able to be straightened with no signs of damage. While weaving the mats, fine figures of flowers, animals, incidents and names are very skilfully and artistically introduced. Marriage mats with coloured designs and coloured edgings are very fine. The mat used by the bride and bridegroom at the weddings among the Holeyas of South Kanara is woven by the bride. Ordinary mats are made and consumed

locally in every district throughout our Presidency, though the following places deserve special mention as headquarters of this cottage industry :—Godavari, Parlakimedi, Guntur and Vindur (Nellore district), Poorisai, Conjeevaram (Chingleput district), Wandivash (North Arcot), Ayyampettai, Sakkarapalli and Shiyali (Tanjore district), Nerur, Ranganadhapuram, and Kulitalai (Trichinopoly district), Karambakudi (Pudukkottai), Central and North Travancore, Palghat (Malabar), Vadakancherry and Chittoor (Cochin), and Coorg.

Kusa mats from Kusa grass are nicely made at Kotipalli in Godavari District. Two kinds are recognized in the markets one with ordinary lining and the other a superior and more costly variety with a beautiful silk lining.

Cocconut mats, from cadjan leaves and coir are manufactured on a large scale on the West Coast, 'the Land of Palms.' From cadjan leaves rough mats are plaited in Travancore and Malabar. Door rugs, stair matting, floor matting, coloured or plain are made from coir. There are two trade varieties of the rugs, machine twist or hand twist. A large quantity of the rugs of a very high quality is manufactured in jails. Door mats are also made with the midribs of cocconut leaves.

In Tinnevely district coarse mats are made from palmyra leaves the work being in the hands of Muhammadan women of Srivaikuntam, Trichendur, etc. These mats are used for packing goods locally and also in Bombay. Pilgrims to Mecca buy these in large quantities but why these are preferred is not clear. Muhammadan ladies of Pulicat, Negapatam, Nagore and Kayalpatnam, Nadar ladies of Kayamoli, and Parava ladies of Manapad, and Tuticorin make fans, small mats, and beautiful fancy boxes with the split leaves. These boxes are coloured and may be shaped like pine apple, crown, mitre etc. They may be ventilated or not and carry a set of inner boxes. Fibre bags are made in Ramnad district.

Screwpine mats are plaited from the leaves in Tranquebar, Malabar, Travancore, etc., where these screwpines grow in plenty on or near the banks of water courses, streams, etc. These mats are very artistically worked and are prized highly for their smoothness. The roots of screwpine are utilized in making mats in Cuddalore where baskets are also made.

In Nellore, etc., the leaves of the Bulrush are used to make mats. Culms are also cut down and woven into mats.

Rattan mats are made from the thin stems

of *Calamus roeang* the surface of which has a hard polished appearance because of the silica deposited in the superficial tissues. They are manufactured in Tanjore district and Travancore.

Bamboo mats are made in Mysore, North Arcot, Travancore and Malabar. The Travancore and Malabar ones are much coarser than the others. In Coorg two small sized varieties of bamboo (*kiri bidru* and *wate*) are used after being split for matting.

Date mats are made in Mysore and Malabar from the leaves. The fibre of hill aloe is twisted and mats are woven. On the West Coast this manufacture is highly developed, the best aloe-fibre mats being sold in Travancore.

In Travancore mats are made from plantain leaf-stalks and from the plantain fibre.

Among the miscellaneous kinds of mats may be mentioned the durma mats made of streaks of the reed *Amphidonax karka*, the Nagasura of the Telugus, the mats made from the leaves of *Corypha taliera* in Chingleput district, the *cuscus tittis* made from the scented grass (*Andropogon muricatus*) in the Telugu districts and the coir matting from sunnhemp (*Crotalaria juncea*).

Mat making is carried on all over South India but on the West Coast on a larger scale than on the East. This is mostly a home industry based on surplus labour of women and children and also of men in the idle season. Mats of all kinds are made by hand labour though the grass mat has to be worked on looms. The castes engaged in this industry are many and are as follows :—Cherumas and Pulayars of the West Coast (coconut, bamboo, date and screwpine mats) Koravas of Travancore and Malabar (Rattan and Reed mats), Koravas of North Arcot (Reed Mats), Muhammadans of Tinnevely, Conjeevaram and North Arcot (Reed mats), Muhammadans of Tinnevely (women mostly) (Palmyra and Reed mats), Parava and Nadar women of Tinnevely (Palmyra mats), Panchamas of the South (Reed mats), Bettakurumbars of Coorg (reed mats) and Odakkarans, Udayars and Pandarams of Pudukkottai (Reed mats).

The present state of the industry cannot be said to be flourishing. Whether it is worked as a home industry giving work for the women etc., the surplus labour or as a main industry on which certain castes are wholly dependent for their maintenance, it is not in the state in which it was some years ago.

At Pattamadai this industry is in the hands of a few poor Labbais and is not worked

properly for want of capital though the excellence of their products and the facility with which these could be exported along the South Indian Railway routes have wholly ruined the North Arcot mat-makers who were doing good business before the southward extension of the South Indian Railway. The North Arcot mat-makers have to pay a very heavy price for the reed to the agriculturist who for the sake of squeezing heavy profits from the mat-makers prefer to cultivate this reed to paddy in spite of the equal quantity of water involved. In Tinnevely the right to collect the reed from the beds of tanks and channels is auctioned by the Public Works Department and the lease amount runs up higher and higher year after year. The quality of mats, *e.g.*, those of Wandiwash could be improved if our experts could devise means of improvement and persuade the conservative mat-makers to adopt them. The looms on which the mats are worked can be improved. Usually the weaver works on a low loom sitting above the work. But in the Tanjore Jail ordinary looms are used and with better results. If the mat-makers could be induced to substitute this or any other improved kind of loom in place of this they need not ruin their health by sitting in cramped positions. In many districts the local demand in spite of the Westernization of many Indian homes, is greater than what could be met from local sources. The output can be supplemented by mats from other districts pro-

vided sufficient capital is forthcoming to enable the poor mat-makers to draw an income more than sufficient for a hand to mouth existence. Transport facilities by rail, etc., should be provided for at cheap rates.

A Botanical Survey may do some good, resulting in the discovery of other grasses useful for the purpose, *e.g.*, the straw grass which grows wild in forests in Tinnevely and Travancore and was considered till now to be quite useless, is used now by the hill men to weave into hats which look like the imported straw or Panama hat.

To save this industry, which will soon be stifled out in many of its centres, are needed capital, better looms and better methods to increase the output and the quality of the mats, better methods of cultivation of the reeds without the huge consumption of water as in North Arcot, a survey of the commercial South Indian grasses and an examination of the industrial possibilities of all South Indian grasses and leaves and fibres. The departments of Industries, Co-operative Societies and Agriculture can be approached to render useful service. The most urgent need, however, is capital and this can be provided for by philanthropic private individuals who are interested in the development of Indian industries. This and the introduction of co-operative organizations will enable the industry to attain a stability which it has now lost.

Taxation of Company Dividends.

A delegation headed by the Chairman of the Legislation Committee of the Ontario Division, waited on the Provincial Secretary, and presented arguments in favour of the restoration of the exemption clause with respect to industrial and commercial dividends in the provincial assessment act and in favour of certain specified deductions which may be made from taxable revenue.

It was argued that the levy on dividends constituted double taxation. A policy of taxation which puts unduly heavy burdens on industry, it was pointed out, would inevitably endanger the industrial reputation of the Province and tend to discourage new industries from establishing themselves in a community where conditions were different.

The deputation asked for restoration of the exemption clause with respect to industrial and commercial dividends; that the "net loss"

if any, in the year's trading, may be deducted from the taxpayer's net income for the succeeding year and any unabsorbed balance may be deducted from the net income for the next succeeding year; that the carrying charges incurred by shareholders to the extent of interest paid on borrowed money on the stock or shares which provided the dividends be allowed as a deduction from taxable income; subscriptions to charities and education to be allowed as legal deductions from taxable revenue to the extent of 15 per cent. thereof per annum, as in the United States, and that "retail" for the purposes of the Business Assessment, provided for by section 10, shall include that portion of the premises owned or occupied by a manufacturer or wholesaler in which sales are made to users or consumers. The Provincial Secretary admitted that the delegation had undoubtedly submitted a strong case.

Co-operation in Madras, 1920-21

By "Rusticus".

In our review of the Madras Agricultural Report for last year, we mentioned the grievous loss which the Agricultural Department and the Civil Service of the Province had sustained by the death of Mr. G. A. D. Stuart. A loss of equal severity has befallen the Madras Co-operative Department whose late head, Mr. F. R. Hemingway, I.C.S., died recently in England. Amongst the essential qualities of a successful Registrar, none are more important than keenness and an enthusiastic belief in the future of co-operation and these Mr. Hemingway possessed in a very marked degree. His reports were always "live" documents, full of shrewd comments on the strong and weak points of the movement as he saw it and full, therefore, of interest to co-operative workers not only in Madras but everywhere in India. Mr. Gray who is now officiating as Registrar, did not succeed to the charge of the Department until after the close of the year on which he has reported. It is evident that he has not yet got into his stride for he is content, in the main, to let the facts tell their own tale. The excellent work he did as Assistant Director of Civil Supplies during the war period, however, makes him specially well qualified to succeed Mr. Hemingway.

In 1920-21, the number of societies in Madras increased by 25 per cent from 5028 to 6289, agricultural credit societies accounting for about five-sixths of the increase. The number of members increased by 21 per cent to 398,062. The average numbers to a society fell by 2 to 65, which is quite a satisfactory feature for 60 is a very suitable number of members. The total working capital increased by 24 per cent from Rs. 394.24 lakhs to Rs. 490.35 lakhs whilst share capital and reserve funds increased by 29 and 21 per cent respectively. Were progress to be judged merely by these figures, there would be no cause for misgivings but it is when we come to the figures of collections that the reverse side of the shield becomes apparent. Five-sixths of the co-operative societies in Madras are agricultural credit societies so that the figures for these are much the most important. It is, therefore, all the more disquieting to find that arrears of principal rose from 23.98 to 30.66 per cent, arrears of overdue interest, that is, interest overdue at the end of the previous year, from 54.01 to 57.68 per cent and arrears of interest which

fell due during the year from 21.56 to 27.60 per cent. In all cases, the percentage for the year was the highest yet reached. The reasons given for poor collections vary from district but the most common are bad seasons and the destruction of crops by floods. A variant which is supplied by Ganjam and Nellore is the holding up of their crops by ryots in the hope of obtaining better prices. Mr. Gray offers no opinion as to the validity of these reasons but the comments on it in the Government review seem to us very pertinent. It is pointed out that, if the facts were peculiar to the year under report or if heavy arrears were confined to those districts only which had suffered from the bad season, no special importance would attach to the figures of demand and collection. Unfortunately, this was not the case. Not only were the recoveries inadequate in several districts in which the season was normal but the figures for several years past indicate that arrears which accrue in a bad season are not recovered in a good one. Slackness in the repayment of principal may be due in part to the grant of loans by primary societies for unduly short terms involving too few and too large instalments of repayment though the history of the movement renders it doubtful whether the grant of loans for longer terms would really be followed by prompt repayments of principal. In any case, this defence cannot possibly be urged as regards repayment either of current or arrear interest. The Government find the real reason for slackness in repayment not in any of those alleged in the Report, but in the habits of unpunctuality in money matters as in other respects which have become ingrained in the ryot and which, in the past, have made him such an easy prey to the local sowcar. The Government add—and their reminder is one which should be laid to heart by all co-operators throughout India—that it is impossible for the ryot to enjoy at the same time the advantage of loans at low interest and also the system of condoned unpunctuality in payment and easy renewal of the bond which are the main attractions offered by the money-lender. The co-operative movement, in fact, cannot be thoroughly healthy unless its members are more business-like than they are at present. The Government hold the view which has always been held in these columns that whilst the real

remedy lies in less laxity on the part of central banks and primary societies, the influence of the staff of the Co-operative Department can be made very effective in this direction. The healthy conditions in the North Arcot District show what can be accomplished by a thoroughly efficient Assistant Registrar. There the Central Bank has practically no arrears either of principal or interest and the balance outstanding against the members of primary societies is specially small. This is the result of years of patient work on the part of Mr. Vedachalla Ayyar, the late acting Registrar. The figures of collections of the 614 non-agricultural credit societies were distinctly better than those of the agricultural societies. The percentages of balance to demand were 14.45 for principal, 11.58 for current interest and 46.92 for arrear interest, but, in every case, these were markedly higher than the figures for the previous year. In the circumstances, it is astonishing that the figures for the Provincial and Central Banks should be as good as they are. For these, arrears of principal amounted to 13.52 per cent only, of current interest to 6.04 per cent and of interest overdue at the end of the previous year to 5.57 per cent. We should have liked an explanation why it is that central banks are able to recover so large a proportion of their dues from primary societies when the latter have so much difficulty in exacting their own dues from their members.

The Report, as usual, contains interesting figures regarding the membership of agricultural credit societies. Of the 280,299 members of these societies, only 37,533 were non-agriculturists, whilst 31,696 were dependent only partially on agriculture, 21,217 were non-cultivating landholders, 30,700 tenants and 12,876 field labourers. The figures for the last two classes show an advance on those of the previous year, though by no means so large an advance as we should like to see, for these are the two classes which the co-operative movement can do most to benefit. Interesting figures are also given regarding the purposes for which loans were advanced. Some Rs. 23 lakhs were given out in 19,498 loans for reducing old debts, Rs 63 lakhs in 91,046 loans for productive purposes and only Rs. 2 lakhs in 2,817 loans for non-productive purposes. The figures of loans for productive purposes show the greatest increase over those for 1919-20, due, Mr. Gray says, largely to the more extensive use by members of costly artificial manures. Al-

though the total number of loans given increased by about 10,000, it will be seen that there is still justification for Mr. Hemingway's criticism of last year that the number of loans issued is far too small in proportion to the membership of societies.

We trust that next year Mr. Gray will be able to remove the confusion which still prevails in the section relating to the transactions of societies for purchase, purchase and sale, and production and sale. The separation of these societies into agricultural and non-agricultural promised last year by Mr. Hemingway has not yet been carried out and until they have been properly classified, it is impossible to say which, if any, of the societies are successful in achieving the objects for which they were established. Not only has there been no separation of societies into agricultural and non-agricultural but the reader is unable to discover what principle has been followed in classifying societies which are clearly agricultural. Thus, at the commencement of paragraph 24 of the Report, we are told that eight agricultural purchase societies were added during the year to the 58 on the list at the end of the previous year, whilst, later on in the same paragraph, it is stated that of the six agricultural societies—apparently trading societies—on the register at the beginning of the year, whose object was the purchase of agricultural implements, manures, etc., one was liquidated, four did no work at all, whilst the remaining one purchased stock to the value of Rs. 2,067 and made a profit of Rs. 160. We are not told why societies for the purchase of implements and manures are classified as trading unions rather than as agricultural purchase societies. Unfortunately, it cannot be said that any of the trading societies fared very much better than those just mentioned. Of the 229 trading societies of all kinds, 106 worked at a profit amounting in all to only Rs. 29,079, 115 incurred a loss of Rs. 49,535 and 8 did not start work at all. Joint purchase by ordinary credit societies amounted to under Rs. 2 lakhs against over Rs. 6 lakhs in the previous year, the difference, according to Mr. Gray, being almost entirely due to the fall in the purchases of food stuffs, chiefly Burma rice. Joint sales fell from Rs. 1.1 lakh to Rs. 61,000 and the estimated profit from Rs. 7,802 to Rs. 1,307. Mr. Gray reiterates the difficulties in the way of joint sales, the chief of which are the grading of the produce to be sold and the unwillingness of members to undertake the risks involved

in the transactions. In order to educate the societies, an attempt is being made to induce members to hand over to their societies for sale so much at least of their produce as will be sufficient to pay off their annual instalments of loans. Mr. Gray hopes that, even though the joint sale system is restricted in this way, a large volume of business may still be possible. But it is all too evident from his description that the co-operative movement in Madras is making very small headway in directions other than credit and that much uphill work has still to be accomplished in that Province, as indeed in most other parts of India, before the trading activities of societies in this country can be mentioned in the same breath as those of most countries in Europe. It is very significant in this connection that India is only mentioned once in Mr. Charles Gide's great book on Consumers' Co-operative Societies which we hope shortly to review in these columns. A few societies in Madras showed something more than the faintest flicker of life. Thus the Tindivanam Agricultural and Industrial Society has buildings, plant and machinery to the value of Rs. 32,766 for hulling paddy, decorticating groundnut and preparing bone-meal and made a profit of Rs. 1,276 on the year's work. The Kallakurchi Taluk Agricultural Society has a 37 horse-power gas engine and distributed 22,000 sets of the excellent Fiji B variety of sugarcane. The Shiyali Agricultural and Industrial Society has purchased a boiler and huller and has at length secured a site for a factory in which to place them. A typical example of the difficulties encountered by this class of society is the record for the half year of the Bunts', otherwise known as the Nadavars' Co-operative Wholesale Society which, although it did a large amount of business in rice, black gram, green gram and other cereals and oil seeds and made a gross profit of Rs. 11,700, yet lost Rs. 386 during the year owing to the heavy cost of management. The Kallai Coir Workers' Society in Malabar deserves mention as it is a society which consists entirely of women with the exception of the President and the Secretary. We should much have liked to record that women had set an example to men in showing what could be achieved by co-operative effort but unfortunately the society was badly hit by the slump in coir and lost Rs. 138.

Fourteen new weavers' societies were registered during the year but there is nothing

in the record of the old ones to make us change our opinion that not even co-operation can rescue hand-weaving from the slough into which it has fallen. It is true that four societies are mentioned as having made a profit but, on the other side of the account, there are such societies as the Somandapalli Weavers' Society in Anantapur, which had to stop sales of yarn as Rs. 13,585 due from its members remained uncollected, and the Kondapalli Weavers' Society at Bezvada which has not yet started work as the Weaving Expert who was the moving spirit in establishing it has been transferred.

The Madras Co-operative Department continues to make strenuous efforts to improve the condition of the backward and depressed classes; 253 new societies for them were registered during the year but the working of this class of society presents no special feature unless it be the enterprise of the Salem Scavengers' Society in securing the lease of the municipal tolls out of which it appears likely to make a "good thing".

The total number of supervising unions increased by 41 to 177 but there are still 1132 societies not affiliated to them. Most of these are, however, either new societies or societies in newly developed areas where unions will shortly be formed. Mr. Gray was not in a position to express any opinion on the work of the unions. In this, as in so many other respects, we have no doubt that next year he will be able to infuse into the dry bones of figures the life which is so singularly lacking in those of his report this year.

The *Statesman* announces that the Marconi Company have made the following offer to the Government of India for a system of direct wireless communication between India, Britain and elsewhere. If required, the Company will either construct a station at their own expense within 12 months and undertake to conduct an efficient commercial service, or, alternatively, they will build the station and conduct the service on joint account with the Indian Government on a basis similar to that approved by Australia. The cost of the station is estimated at £400,000, exclusive of patent right. Wireless experts estimate that direct wireless would cost very little more than the intermediate-station scheme approved by the Norman Committee, and would be more efficient.

Some Economic Aspects of the Genoa Conference.

The Genoa Conference, arising out of the resolutions adopted by the Supreme Council at Cannes in January, met on April 10. At Cannes the resumption of international trade was declared to be dependent upon the following fundamental conditions :—

1. Each nation to be at liberty to regulate its own system of ownership, internal economy and government.

2. Before a country is assisted by foreign capital foreign investors must be assured that their property and rights will be respected.

3. Governments of countries desiring foreign credit must undertake :—

- (a) To recognize all public debts and obligations and give compensation for the confiscation of property.

- (b) To establish a legal system which sanctions and enforces contracts with impartiality.

4. Financial and currency conditions must offer sufficient security for trade.

5. All nations should refrain from propaganda directed against the political system of other countries and should undertake to abstain from aggression against their neighbours.

The agenda for Genoa approved by the Supreme Council included the examination of methods for putting the above principles into practice, the establishment of European peace on a firm basis, financial subjects such as the regulation of currencies and exchanges, co-ordination of the policies of central banks, the organization of public and private credit matters concerning the import and export of goods, and transport.

EXPERTS' REPORT ON RUSSIA.

At the end of March a conference of experts representing Great Britain, France, Belgium, Italy and Japan met in London to consider and advise upon the financial and economic questions about to come before the Genoa Conference. The first part of the report of these experts deals with Russia and the second with the restoration of Europe. It is proposed that the Russian Soviet Government should accept the financial obligations of its predecessors and recognize the financial engagements of all authorities in Russia with other Powers or their nationals, and should undertake liability for losses, whether arising out of breach of contract or otherwise, due to the action or negligence of the Soviet Government or its predecessors. The liabilities under

these clauses would be determined by a Russian Debt Commission and by Mixed Arbitral Tribunals. It is also suggested that balances standing to the credit of a former Russian Government in any bank in a country the Government of which made advances to a former Russian Government between August 1, 1914, and November 7, 1917, should be transferred to the Government which made the advances, and that the liability of the Soviet Government should be *pro tanto* reduced. The scheme proposes that Russian Government bonds in foreign currencies, and provincial, municipal, railway or public utility bonds in foreign currencies, to be guaranteed by the Soviet Government, should be revived, but interest and repayment of capital due from the date when payments ceased until a date which has been provisionally fixed at November 1, 1927, would be funded. Rouble loans of the Russian Government or of the bodies last mentioned would, if proved to have been continuously in foreign ownership since the date of repudiation by the Russian Government, be exchangeable into new Russian bonds. New Russian bonds would be issued in respect of funded interest and capital due for repayment between the date when payment ceased and November 1, 1927, and also for the purpose of meeting all accepted claims for monetary compensation. The bonds would carry a rate of interest to be determined by the Russian Debt Commission, but interest would be funded and the Russian Government would not be required to redeem any bonds until November 1, 1927. The bonds would be free from all Russian taxation, and in general would be expressed in the currency of the holder's country. If this scheme is adopted the rates of conversion between paper roubles and foreign currencies will be fixed by the Debt Commission, which will first ascertain the average gold value of the rouble in October, 1917, and then calculate the equivalent in each of the foreign currencies at the time of issue of the bonds.

These suggestions as to the determination of Russia's liabilities are being considered by the Genoa Conference. The scheme for the restoration of Europe, in so far as it concerns currency and exchanges, has been dealt with by the Financial Commission of the Conference, and a report has been issued, a summary of which appears below.

RECOMMENDATIONS OF FINANCE COMMISSION.

At the opening of the Conference various commissions were appointed, No. 1 to discuss the conditions imposed by the Cannes resolutions, Russia, and general questions relating to the establishment of international peace; No. 2 to deal with finance, currencies and exchange, No. 3 with economics, commerce and tariffs, and No. 4 with transport. The Finance Commission has appointed three sub-commissions, for currency, exchanges and credit. At the first meeting of the Sub-Commission on currency the preliminary draft prepared by the experts in London at the end of March was dealt with. This draft was fully considered, additions were proposed, and amendments were suggested by the German and Russian delegates.

The Finance Commission has now issued its report, consisting first of certain resolutions recommended for adoption and, secondly, of reports of the Committee of Experts appointed by the Currency and Exchange Sub-Commissions of the Finance Commission. The first part of the report advocates continuous co-operation among central banks of issue, which should be established where not now existing, and suggests that an early meeting of representatives of central banks be called by the Bank of England to consider the basis of an international convention for the purpose of centralizing and co-ordinating the demand for gold. The participating Governments should declare that the restoration of the gold standard is their ultimate object in the effort to attain stability and a common standard of value. Each Government should agree to meet expenditure without the creation of fiduciary money or bank credits and to fix the gold value of the monetary unit as soon as circumstances permit. The gold value so fixed must be made effective in a free exchange market and the maintenance of the currency at its gold value must be assured by the provision of an adequate reserve of approved assets. Certain countries should establish a free gold market, but a participating country, in addition to its gold reserves, may maintain reserves in the form of bank balances or other suitable liquid resources in any other participating country. A participating country will ordinarily buy and sell exchange on other participating countries within a prescribed fraction of parity in exchange for its own currency on demand. The convention will thus be based upon a gold exchange standard.

The Commission are opposed to interference with the freedom of the market for exchange but invite the League of Nations to consider measures for international co-operation to prevent tax evasion. The Commission are of opinion that all artificial control of operations in exchange is undesirable, and that where no adequately organized market in forward exchange exists such a market should be established. This might be effected by the central banks, which should deal with approved banks and financial houses, and should quote rates for buying and selling forward exchange. Quotations should be for the double transaction of a spot deal one way and a simultaneous forward deal the other. Foreign balances and securities on deposit on account of other central banks should be guaranteed by the holding bank and by the Government as regards freedom of movement and absolute exemption from taxation, forced loans, and moratorium.

The second part of the report, consisting of the reports of the Committee of Experts, points out that a return to pre-war parity in the case of those countries whose currency has fallen far below that level would involve social and economic dislocation and a continual increase in the burden of internal debt. In such case, when comparative stability has been attained, a new gold par should be fixed. The industry of Europe cannot be re-established so long as the burden of excessive expenditure is felt either in the form of heavy taxation or inflation of currencies. External obligations, *e. g.*, reparations, can only be met by the sale of goods, and in the absence of capacity to absorb these goods and of a foreign loan, dislocation of markets in other countries and continual depreciation of the currency of the debtor country must result. The resolutions propounded by the Committee of Experts are adopted in the main report and have been outlined above.

These propositions, when scrutinized, obviously go little further than the suggestions advanced by the Brussels Conference in 1920, and seem to be somewhat divorced from reality. Abstractions as such are of very little use in view of the condition of Europe, even if these abstractions are wholly admirable in sentiment. The present need is rather for suggestions as to remedial measures for each individual country. The general principles set out above would in their practical application require to be modified in various respects, and in the case of each country differently.

It will be noticed that the Finance Commission emphasises the necessity for devaluation when stability has been attained, but the value of a fresh enunciation of this excellent principle was somewhat impaired by the reported declaration of the representatives of Italy, France and Belgium that these countries would adopt no policy of devaluation. If this is the official Government view, then any attempt to regain the old gold par, in the absence of excessive inflation in America, must be accompanied by drastic deflation with its attendant evils. The relation between debtor and creditor would be disturbed and the increase in the burden of the war debt would range from 100 per cent. to 300 per cent.

The result of the consideration by the Com-

missions on Trade and Transport of the report of the experts at London has not yet been published. Presumably the decision as to Russia has been delayed by the action of Germany in concluding a separate treaty with that country. By this treaty each country renounces all indemnities for war costs and war damage, and diplomatic relations are to be resumed. Commercial relations are to be based on the most favoured nation principle. As a result of the conclusion of this treaty, Germany has been excluded from the Russian deliberations and from Commission No. 1, and the Government have reserved the right to declare null and void any clause which may be recognized as contrary to existing treaties.

Bureau of Foreign and Domestic Commerce.

It appears worth while to call attention at this juncture to the steps which are being taken in the United States to reorganize the Bureau of Foreign and Domestic Commerce.

Until a year ago the Bureau was divided geographically. There were sections responsible for statistical work, study of foreign tariffs, etc., but in the main the grouping was by geographical units. From July last there was added a "Commodities Department," divided by industries into 14 groups. The Budget for the fiscal year ending June 30, 1923, proposes to increase the number of commodities sections to 31, each being in charge of an officer with a salary of \$6,000 (in one case \$8,000).

The Bureau as recognized is in fact an imitation of the structure of the Department of Overseas Trade, in which market and trade officers work side by side and supplement each other's activities.

A summarized statement of the Budget is appended. It will be seen that whereas it is proposed to reduce the expenditure of the Department of Overseas Trade from £488,946 to £345,306 (leaving out the non-recurrent expenditure of £30,000 on the Rio Exhibition) the expenditure of the Bureau is to be increased from \$1,228,510 to \$1,970,530.

It will be observed that it is proposed to make an increase of 50 per cent. in the number of overseas officers.

The Trade Commissioners and their staffs are paid out of the money allotted to "promoting commerce." Though given a different title, they are charged with exactly the same duties as the Commercial Attaches.

The estimate included in the Budget submitted to Congress by the President December 5, 1921, shows a total increased expenditure of \$742,020 for the services of the Bureau as compared with the appropriation granted for the coming year:—

	FISCAL YEAR ENDING JUNE 30.		Increase Per Cent.
	1922 \$	1923 \$	
Promotion of Export Industries ..	250,000	540,000	116.
Promoting Commerce in Canada and Europe ..	325,000	524,000	61.2
Do the Far East ..	150,000	235,650	57.1
South & Central America ..	100,000	213,650	113.6
Commercial Attaches ..	171,000	205,800	20.3
Bureau at Washington ..	232,510	251,380	8.1
Total ..	1,228,510	1,970,530	60.4
Foreign Services	1922	1923	New Salaries \$
Commercial Attaches ..	13	15	6,000-8,000
Canada and Europe—			
Trade Commissioners ..	18	32	4,000-6,500
Assist. Trade Commissioners ..	5	9	3,000-4,500
Clerks to Trade Commissioners ..	20	27	1,200-3,000
Far East—			
Trade Commissioners ..	11	14	—
Assist. Trade Commissioners ..	—	4	—
South and Central America—			
Trade Commissioners ..	5	12	—
Assist. Trade Commissioners ..	4	6	—
Clerks to Trade Commissioners ..	5	10	—
Total ..	81	129	—

The Common Weal.

By William Graham, LL.B., M.B.

In the interests of genuine economic progress there is probably no finer new year resolution than that which indicates that it will seek not so much material wealth as riches of character and service.

It is true that in the present hapless condition of the world there must be strenuous effort to make good the devastation and the loss of war. With wages, salaries, and general income falling in nearly every land there will be an almost bitter struggle to maintain a standard of life, or that real position which is measured in terms of purchasing power. Millions of pounds weekly have already been deducted this year from the wages of British workers. They see war-time again disappearing, and very soon it is believed that large numbers of them, notwithstanding the fact that the cost of living is still nearly 100 per cent above the retail price level of July, 1914, will be reduced to the admittedly low and sometimes scandalous rates of the pre-war period. In these circumstances it is not surprising that immediate issues should dominate the field rather than the longer and deeper view.

But even in that somewhat depressing atmosphere it is necessary to emphasize as a new year resolution that the remedy lies far below the surface of current events. It will be found partly in the steady change which is taking place in British industrial control. On one hand, the war strengthened the trusts and combines in their growth; on the other, there was a remarkable recognition of the trade unions, professional associations and the general principle of collective bargaining in the State.

It is tolerably plain that Great Britain cannot much longer evade definite effort to deal with the trust problem. The fusion of banking interests, the interlocking directorships in coal and iron and steel and every branch of industry and commerce, the visible and the invisible agreements, the price associations, and the loose arrangements which almost everywhere prevail, have practically eliminated the old forms of unrestricted competition, and have largely abolished its waste, but at the same time have directed the attention of thoughtful minds to the substantial change in the influence and power of organized industry and commerce which have been introduced.

On the other side, perhaps the outstanding feature of the past year was the machinery for wages regulation established under the Railways Act. It was a decisive statutory recognition of the railway companies as employers, the three railway trade unions as employees and the general public as consumers of all the forms of railway service. That in its initial application it has still great difficulty to face is clear, but it is reasonable to regard it as a device capable of widespread adoption, and possibly, when extended, as a model of the applied Whitleyism or joint control which pioneers are now endeavouring to promote. Extended so as to mean a joint management, it would place at the disposal of all interested in a great industry the whole of the facts regarding its capital, the possibilities of development of its annual product going to capital on one hand and labour on the other, and the exact service it was rendering to the community as a whole. In other words, there would come in due course the right kind of publicity in industry, and with publicity, presumably a much better spirit on the part of all interested in its rapid progress.

Of course, innumerable employers will steer clear of Whitleyism, and innumerable workers will be either indifferent to or but mildly interested in what some of them regard as a pious but futile pursuit. And yet a little closer investigation would show that if 1922 did nothing more than materially strengthen the movement towards democratic industrial management, it would confer upon the masses substantial power in making provision for the recurrence of that economic crisis of which they have had almost a year of dismal experience.

The Madras Government have sanctioned the levy of an educational tax in the Vellore Municipality as proposed by the Municipal Council in its resolution dated the 18th April 1922. They have also accepted the resolution of the Municipal Council, Vellore, that Elementary Education shall be compulsory for all boys of school-going age within the whole of the local area under its jurisdiction. The Government have accordingly ordered that the provisions of sections 47-52 of the Madras Elementary Education Act, 1920, shall come into force within that area from 1st August 1922.

The Delhi University

By the Principal, Hindu College, Delhi.

The Delhi University which came into being on the 1st of May 1922, began its career on the 31st of that month when the first meeting of its Provisional Executive Council took place and by the 13th of June 1922 it had defined its organization, outlined the constitution of its authorities and framed all necessary regulations and rules.

THE PROVISIONAL EXECUTIVE COUNCIL.

The Provisional Executive Council had all the powers of the Executive Council of the University, and pending the formation of the Academic Council, was unhampered in the making of ordinances. In addition to this it had all the powers of the Admission Committee and the Selection Committee, provided that the appointment or recognition of teachers of the University was limited to two years. But it had no powers of the Court, which alone can make Statutes, and so its proposals for their enactment had to be submitted for sanction to the Governor-General in Council as required by the Act.

THE COMMITTEES.

On the 1st day of its meeting, the Provisional Executive Council appointed three committees from among its members:— A Selection Committee to recommend candidates for the appointment of the Registrar; a Procedure Committee to make proposals for the organization of the University and to recommend the recognition or appointment of teachers of the University; and a Finance Committee to frame the Budget of the University.

WORK OF COMMITTEES AND PROVISIONAL EXECUTIVE COUNCIL.

The Provisional Executive Council and the Committees set to work almost from day to day, and in less than a fortnight the Registrar had been appointed; the Faculties of Science and Arts were constituted; the departments of teaching were created; the three existing colleges were recognized as colleges of the University; the members of the staff of colleges were recognized as teachers of the University, and 15 from among them appointed as readers and one as lecturer.

UNIVERSITY AND GOVERNMENT OF INDIA.

The Government of India were approached to assign a seat on the Legislative Assembly to the University, as unanimously recommended by the joint select committee on the Univer-

sity Bill; to open its State scholarships to members of the University, and to accord to them the privileges of nomination to Government posts and selection for competitive examinations, while the local administration of Delhi was approached to give Government scholarships in place of those given by the Punjab Government to successful candidates joining the colleges in Delhi.

EXAMINATIONS AND INTER-UNIVERSITY ARRANGEMENTS.

Negotiations were opened with the Governing body of the Lady Hardinge Medical College, Delhi, for its inclusion in the University so far as its science teaching, including F.Sc. Medical group, was concerned the School Leaving Certificate and other examinations recognized by the Punjab University as equivalent to its own Matriculation examination, were approved as equivalents to the Matriculation examination of any Indian University incorporated by law for the time being in force; and it was decided to adopt the courses of study prescribed by the Punjab University upto 1924, and to hold the same examinations or examination of the same standard up to that date. All Indian Universities were approached to recognize, upto 1924 in the first instance, the examinations of the Delhi University, and to accord to its students the same privileges as if the Delhi colleges had been affiliated to the University of Punjab. The Universities of Punjab and Allahabad were approached to approve the rules of migration of students from their territories to the territories of the Delhi University; and it was decided that the Universities of Oxford and Cambridge be moved to extend to the Delhi University their rules of affiliation in regard to the University of Punjab.

UNIVERSITY FINANCE.

The Government of India had provided Rs. 75,000 for the University in their budget for the current year and the Finance Committee framed its budget, with due regard to the financial stringency and the essential requirements of the University, making provision for one full time professor and one full time reader only. The Finance Committee also submitted proposals for the budget for the next year and the Provisional Executive Council decided to request Government to

increase their maintenance grant for 1923-24 to two lakhs of rupees and to incur an expenditure of three lakhs of rupees on University Buildings in the new capital. It was intended to appoint three full time professors and six full time readers of the University next year.

THE ACADEMIC COUNCIL.

With the appointment of the readers from among the staff of colleges, the nucleus of the Academic Council was formed; and after two informal meetings of the readers, a meeting of the Academic Council was called, which assigned subjects and teachers to Faculties, co-opted a member to its own body, and considered the general outlines of its work in the University.

THE COLLEGES AND THE UNIVERSITY.

The relation of the colleges to the University, so far as teaching arrangements were concerned, were more clearly defined and a distinction made between recognized and appointed teachers of the University, selected from among the staff of colleges. An Admission Committee was appointed to enrol students in the University, and the procedure of registration and enrolment of students was laid down.

REGISTRATION OF GRADUATES AND CONFERMENT OF 'AD EUNDEM' DEGREES.

As, in order to complete the formation of the authorities of the University, it was necessary to organize the Court, rules for the conferment of *ad eundem* degrees, and the registration of graduates, entitled to elect 25 members to the Court, were passed, with a view to an early constitution of that body.

DUTIES OF OFFICERS.

The duties of the Treasurer and Registrar and other officers of the University were laid down in accordance with the Act and the Statutes; a Provident Fund was constituted for the benefit of the employees of the University; rules for travelling and halting allowances of officers and employees of the University and of members of the Executive Council, the Government and other authorities of the University were passed; and regulations regarding meetings of the Executive Council were approved.

OUTLINES OF FUTURE WORK.

In addition to this, a great deal of future work was outlined. The Vice-Chancellor's draft rules and regulations, in connection with departments of teaching, courses of study and the conferment of degrees, were laid before the Academic Council, to be considered, in all probability, when colleges re-open after their

summer vacation in October. The Academic Council had, in addition to this, a great deal of work before it, in organizing the teaching of the University and evoking a spirit of inquiry and research.

REQUIREMENTS OF THE UNIVERSITY.

The University has but started on its career and within less than 14 days has accomplished what has taken as many months elsewhere. But a great deal yet remains to be done. It has no house of its own; it has no library; it has yet to develop its teaching in science and arts, and the constitution of the Faculties of Commerce, Technology and the Fine Arts is still an event of the future. An attempt has been made to approach the Government of India and the Imperial Library, Calcutta, with a view to form a nucleus of University library, but a library worthy of a university will, at this rate, take years to grow.

LACK OF FUNDS.

The University is suffering lamentably from lack of funds; and it may without exaggeration be regarded as the poorest University in India. It started life with a grant of Rs. 75,000, but it is not certain whether the axe will not be applied to it too. It has the cheapest full time Registrar of all Universities on a salary of Rs. 500 a month. Its office establishment costs little more than the office establishment of a well managed college; it is unable to pay any subsidy to its part-time readers appointed from the staff of its colleges; and the appointment of its full time professor and reader depends on the full grant of Rs. 75 thousand being available for the current year. Considering the expenditure of other universities, affiliating or unitary, and taking into account the number of students for whom provision is made—for the Intermediate classes form part of the University for at least five years more—it may be regarded as the cheapest university in the country. But it cannot be run on its present lines for long, and more money must be forthcoming if it is to succeed.

ENDOWMENT.

While there is urgent need for more munificent endowments, the people of Delhi have not forgotten the University. Mr. Puran Chand, Assistant Traffic Superintendent, B. B. and C. I. Railway, made an endowment of Rs. 5,000 for two Khatri scholarships, and Mr. Bisheshar Nath Goela offered to found three gold medals, promising to make an endowment yielding an annual income of Rs. 300.

CONCLUSION.

The University has, in spite of many difficulties, accomplished a great deal in a short time; and at this rate it would bid fair to outstrip many of its sisters in the race. It is expected that the foundation stone of the University Buildings will be laid by His Ex-

cellency the Viceroy in November next, when the first Convocation of the University will take place; and by that time the organization of the various authorities of the University would in all probability be complete; and the University, with its Court, Executive Council and other full-fledged bodies, would be in normal working order.

Agriculture in India.

The twelfth meeting of the Board of Agriculture in India was held at Pusa on the 13th February 1922 and the following days under the presidency of Mr. S. Milligan, M.A., B.Sc., Agricultural Adviser to the Government of India. There were 49 members and 31 visitors present from all parts of India. The President's speech was devoted to a survey of the achievements of the past year. The following are the important resolutions passed. For detailed reports of the various committees and discussions, we would refer our readers to the printed report of the proceedings as we have no space to reproduce them:—

RESOLUTIONS.

1. That the Board endorses Resolution No. XIII (2) of the Board of Agriculture which met at Poona in 1917 that whatever expenditure may be undertaken in connection with general, rural or definitely agricultural education, there should be no resulting diminution in, or limitation of, the funds or staff that are necessary for the maintenance and progressive development of the research and demonstration work which are the main functions of the Agricultural Department.

2. That while maintaining the position taken at the Board of Agriculture in 1917, the Board is of opinion that the agricultural middle schools there suggested do not, by any means, exhaust the methods of agricultural education which can be suitably applied, and invites Local Governments to consider carefully the schemes which are being developed in Punjab and elsewhere, and would urge experiment as to the methods most suitable for the very varying conditions in different parts of the country.

3. That in the opinion of this Board, it is highly undesirable at present to attempt to draw any definite line between the spheres of activity of the Departments of Industries and the Departments of Agriculture.

4. Without expressing an opinion on the portion of the Committee's report dealing with phosphatic manures, the Board is of

opinion that, on the evidence before it, it is doubtful whether the method of prohibition or restriction of export of bones, fish manure and other phosphatic manures would achieve the end desired; but it is nevertheless of opinion that the retention of its manurial resources, especially of phosphates, is of vital importance to the future of the country, and that it is essential that a constructive policy should be framed which would lead to this end, and it therefore requests the Government of India to appoint a small Committee of about five members to consider the question from this point of view and suggest a constructive policy which will lead to the results desired.

5. That the Board does not endorse the recommendation of the Sectional Meeting of Chemists and Bacteriologists regarding measures to be adopted to ensure the continuity of field experiments of a permanent nature.

6. That the Board strongly recommends the immediate establishment of a Dairy School at Lucknow as already sanctioned by the Secretary of State for India.

7. That the Board recommends the constitution of a Central Cattle Board composed of representatives of the Provincial Governments and Indian States assisted by certain officers serving under the Government of India and under the presidentship of the Agricultural Adviser to the Government of India. The precise constitution and functions to be left for settlement by the Government of India in consultation with the Agricultural Adviser to the Government of India.

8. This Board is of opinion that in order to bring animal husbandry in line with the other activities of the Department, a live-stock expert should be appointed to the Department of Agriculture in those provinces in which that has not already been done.

9. That animal husbandry should form an important part of the district work of the Agricultural Department and that the existing organization of the Department should be utilized to the fullest extent to this end.

Lignites in Southern India.

On the 24th February 1922 a paper was read before a joint meeting of the Dominions and Colonies and Indian Sections of the Royal Society of Arts on Lignites and Brown Coals and their importance to the Empire by Dr. W. A. Bone, F.R.S. Mr. Cyril S. Fox of the Geological Survey of India furnished Dr. Bone with the following particulars regarding the occurrence of lignites in the Madras Presidency, and supplemented this later by a further note contributed to the *Journal of the Royal Society of Arts*. Mr. Fox wrote:—“The occurrences in Cannanore, Beypore and Warkalli of Malabar in the Madras Presidency are important. It is estimated that 276 million tons of lignite are available in the coastal tract of Travancore:.....The lignite beds of the Malabar coast, particularly in the Travancore country, do not appear to have received the serious attention they deserve. The matter is the more urgent when it is appreciated that 90 % of the coal production of India is obtained from the so-called Bengal Coalfields of Raniganj, Jherria and Giridih, and that the railway transportation facilities from this region are admittedly inadequate. It is only too well known that any dislocation of the coal traffic from this area, either as a result of labour trouble or other causes, seriously affects the various industries which depend on the supply of coal from the above fields. The recent establishment of great steel and iron works and the projected erection of similar larger plants in the neighbourhood of the Bengal coalfields must lead to strict economies in the utilization of the valuable coking coals of these fields. It would, therefore, seem that the time has come for a consideration of the decentralization of the coal supply of India. By the development of other fuel resources of the country, it is possible that cheaper fuel may be obtained in certain more distant industrial areas now dependent on Bengal coal. It is also likely that a stimulus will be given to the local commercial activity of those tracts which have peculiar industrial potentialities.”.....

“In many ways the Travancore area appears to offer an attractive field for investigation. At present little is known. There are said to be nodular accretions of resinous matter in these lignites which may prove of economic importance in a subsidiary way. But a full preliminary examination of the area is urged. If the results are encouraging, attention may

later be turned to the buried resources of the Trichinopoly District of Madras and to other tracts of India. A French company was floated to work the Pondicherry area, but a “hitch” which occurred was purely a financial one. It is to be regretted that these areas have not received the attention they deserve. The question becomes more pressing each year, and now that briquetting is an established method of marketing friable fuels, and the Froth Flotation process for cleaning and drying low grade coals has been shown to be both economical and advantageous, it is evident that the time is ripe for a re-investigation of some of the more favourably located occurrences of Indian lignite.”

“There are likely to be many possible demands for the briquetted lignite from the Travancore littoral supplies for the coastal shipping; for the Southern Mahratta Railway through Marmagoa; for various potential chemical industries, such as the establishment of cement works, the purification of bauxite in the production of alumina, the manufacture of magnesium sulphate from bitterns, the preparation of fish manure, etc., if the lignite proves suitable for direct briquetting and can be prepared cheaply for supply to the west coast of India.”

Under article 3 of the United States of America Immigration Act of 1917 all natives of India are excluded from the United States of America unless they can prove that they hold the status or occupation of Government Officers, Ministers or religious teachers, missionaries, lawyers, physicians, chemists, Civil Engineers, teachers, students, authors, artists, merchants and travellers for curiosity or pleasure, or are the wives of legal children (under 16) of such persons. Indians who claim to belong to the above classes must present in support of such claim, evidence procured in their place of domicile, showing what their status or occupation has been during a period of at least the two preceding years. Such evidence must be of a convincing nature, and its authenticity must be attested by the Consular Officer of the United States of America located nearest such place of domicile. This evidence is in addition to the passport required under the United States of America passport regulations, but the section 6 certificate prescribed under the American Act of 1882 for use in the case of persons proceeding to the Phillipines, is not necessary.

Canadian Trade and Finance.

Montreal, 1st June, 1922.—The approximate accuracy of the earlier estimates of the size of the 1921 spring wheat crop is substantiated by the reports of the quantities that have been marketed to date. According to the estimates the western spring wheat crop was expected to amount to some 275,000,000 bushels. The amount marketed at country points in the West, from September 1, 1921 to May 12th of this year, was 211,800,000 bushels, in comparison with 175,800,000 bushels for the same period of the previous year. This is an increase of 36,000,000 bushels, or 20 per cent. Although the amount marketed to date is not an absolutely accurate indication of the total yield, it shows that the 1921 western crop will be some 40,000,000 bushels larger than the 235,000,000 bushel crop of the preceding season.

THE BRITISH BUDGET.

Of particular interest, both to financial circles and to the general public, are certain features of the British budget for the fiscal year, 1922-23. Contrary to precedent, no provision appears for any reduction in the external debt during the coming year. Instead, some important reductions have been made in the heavy burden of taxation.

The nature of the budget itself, and the statement made by the Chancellor in introducing it, have certain important implications. In the first place, the creditable achievement of the British taxpayer in recent years is recognized. In comparison with less than £200 million in the first year of the war, the total returns from taxation had reached almost a billion pounds in the fiscal year ending March 1920. During the last fiscal year, the tax burden in Britain was approximately \$128 per capita, in comparison with a per capita taxation of \$32 in the United States, and of \$51 in France.

The principle underlying British wartime financial policy was that the revenue receipts should at least provide for the ordinary peacetime budget, and, in addition, for the interest upon the debt, as well as for an annual sum to be applied to its reduction. As indicated by an analysis of this year's budget, the Exchequer has decided upon a slight modification of policy. While recognizing the advisability and the necessity of providing for the payment

of national, as well as of individual obligations, the budget emphasizes the fact that discretion must be used in the application of taxation for this or for any other purpose. There is always the danger that taxes which are exorbitant may defeat their own end; they may kill incentive in business and in industry, and also they may decrease the purchasing power of the consuming public. The British Exchequer is obviously turning towards a policy of avoiding this result by spreading the settlement of obligations out over a longer period, in such a manner that it will not be too oppressive to this particular generation. Thus trade is given a breathing spell in which to recover.

In the tax reductions that were made, the British Government has endeavoured to distribute the advantage equitably. Both direct and indirect taxes are affected. The income tax is reduced from six shillings in the pound, to five, which is a five per cent drop. This will affect, in the main, the higher salaried groups, *i.e.*, the upper and middle strata of the community. The duty on tea is decreased by four pence per pound, and the duties on coffee, cocoa and chicory are reduced by a third. In addition, provision is made for a drop in the postal and telegraph rates. These latter changes, more particularly, favour the masses, who are below the income-tax paying level.

The budget, as presented, in certain respects is evidence of the soundness of the British financial position. Without making any allowance for possible payments from Germany, there is a small surplus, after providing £25,000,000 for contingencies. In the past three years, the British external debt has been reduced by £274,000,000. The improvement in sterling has lowered British obligations to the United States, from £1,301,875,000, when the pound stood at \$3.30, to £946,820,000 at the present time.

TRADE WITH ARGENTINE.

A factor of vital interest to the Canadian business public is the lack of any well-developed manufacturing industries in Argentina. Canada produces many commodities which the people of this southern republic need. Canadian agricultural implements for many years have been sold there in considerable quantity. During the fiscal year ending March 31, 1921, they bought Canadian agricultural machinery to the value of \$1,093,476, in

addition to large quantities of binder-twine, newsprint, lumber, automobiles and steel products; the value of iron and iron products shipped to them was well over three million dollars, of which over \$728,000 represents the value of locomotives and their parts. Exports of newsprint amounted to \$1,572,069, and of other wood products almost \$2,000,000. While these figures cover a period of comparatively high prices, and while the fiscal year just closed shows a substantial reduction in business done, there is undoubtedly a potential demand for many Canadian products, provided there is the proper advertising of the goods; and representation of the firms, in the southern republic.

In connection with trade relations between Canada and the Argentine, an important feature too often is lost sight of, namely, that the building up of a more substantial Canadian export trade will depend, to a certain extent, on the increase of Canadian purchases in the

Argentine. During the fiscal year ending March 1921, out of a total trade of \$10,728,811 between the two countries, \$8,171,980 represents the value of Canadian exports, while Canada bought only \$2,552,831 worth of goods direct from the Argentine.

Chief among those products which Canada now buys from the Argentine are hides and skins, flax-seed, casein, corn and meats. Purchases of hides and skins during the fiscal year ending March 1921, amounted to \$1,316,850; flax-seed and other seeds purchased were valued at \$798,369; over \$100,000 worth of quebracho and similar products were also imported. It is beyond doubt, however, that a quantity of Argentine products find their way to the Canadian consumer by way of the United States. The more we buy direct from the Argentine Republic, the better will be the steamship service between the two countries, and the better will be the prospects for the sale of Canadian goods.

Coffee in India, 1920-21.

By the Director of Statistics in India, Calcutta.

The coffee industry of India is practically confined to Southern India, comprising the Madras Presidency, Coorg and the States of Mysore, Travancore and Cochin. The number of plantations in the year under review was 2,942 covering an area of 223,524 acres, as against 2,468 with an area of 230,848 acres (revised figures) reported a year ago. New land planted with coffee during the year amounted to 12,141 acres, while the area of old cultivation abandoned was 3,880 acres. This represents a net increase of 8,261 acres over the revised total area (116,411 acres) under coffee for 1919-20. The total area under cultivation in the year under report was, therefore, 124,672 acres, or an increase of 7 per cent over that of the preceding year. Of the total area under coffee during 1920-21, 50 per cent was in Mysore, 26 per cent in Coorg, 21 per cent in Madras, and the remaining 3 per cent in Cochin and Travancore.

The total production of cured coffee during the year was 22,486,696 lbs., as compared with 21,325,035 lbs., (revised figure) in the preceding year — the yield per acre of plucked area being 246 lbs. (185 lbs.) in Travancore, 235 lbs. (217) in Coorg, 210 lbs. (206 lbs.) in Madras, 189 lbs. (178 lbs.) in Mysore and 132 lbs. (107 lbs.) in Cochin, the figures for 1919-20 being shown in brackets. The daily average

number of persons employed in the plantations during 1920-21 was returned at 74,945, of whom 50,334 were permanently employed (namely, garden labour 32,598; and outside labour 17,736) and 24,611 temporarily employed (outside labour), as compared with 60,868 persons (28,030 garden and 10,417 outside labour permanently employed and 22,421 temporary outside labour) in 1919-20.

Coffee is imported chiefly from the Straits Settlements and the Kenya Colony (formerly known as the East African Protectorate) and re-exported to Asiatic Turkey and Maskat Territory.

Exports of Indian coffee increased in 1921-22, as compared with the preceding year by 1,600 cwts. to 235,000 cwts. The principal customers of Indian coffee are France and the United Kingdom; the former increased her demands by 94 per cent to 80,900 cwts, while the latter reduced her requirements by 14,000 cwts. to 85,300 cwts. With the exception of Australia including New Zealand, which took 1,500 cwts. more than in the preceding years, the exports to all other countries decreased. Exports to Asiatic Turkey declined by 25,500 cwts. and amounted to 5,500 cwts. Arabia, Bahrein Islands and Ceylon also reduced their takings considerably.

Industrial Notes from the United States.

By Alfred T. Marks.

Washington, D.C. U.S.A., May 25, 1922.—Now that motion pictures are being utilized to such an extensive and increasing degree in our industries—and profitably so—it will probably be of interest to detail a trip of inspection made a few days ago by the writer to one of the largest film-producing studios in the eastern part of the United States—particularly the methods of making the pictures.

Motion-picture making is the sixth industry in America to-day—and the motion-picture camera man put it there. A dozen years ago, when the industry was in its infancy, the films were of poor photographic quality; they were indistinct; they jumped about the screen in a most disconcerting manner, and they flickered to such a degree that only the strongest of eyes could attend a performance. Yet the stories these films told were good stories, comparing favourably with those of to-day. The fault was clearly not with the stories or the acting. But no audience cares to be discomforted, and so it came about that the entire future of the industry was placed in the hands of the camera man. To him was assigned the task of producing good photographs, while the industry awaited the outcome of his efforts.

Fortunately, the camera man was not alone in his efforts, for the film manufacturer, realizing that the raw film was the very foundation of good photography, worked on his chemicals and methods and emulsions until he evolved a stock which was faster and more reliable. Further aid came from cinematograph engineers, who turned their efforts to evolving better cameras, better printing machines, and rock-steady projectors. Finally, optical experts, wishing to prove their battle cry that "it's all in the lens," after a careful study of the peculiar requirements of motion-picture photography contributed their quota in the form of better lenses.

All of which went to place the American motion picture high in the scale of photographic quality.

One interesting example serves to show what has been accomplished photographically in this great and growing industry. Twelve years ago a domestic film showing a group of people was so indistinct that the features could not be made out; to-day a film scene

of a battle, including nearly 4,000 people, is so clear that every figure can be made out plainly when projected on the screen. And each of these figures appears as a pin-point on the film.

There is nothing mysterious about a motion-picture camera, yet the laity is wont to look upon it as a symbol of the black art. Boiled down to its essentials, a movie camera consists of a high-speed lens, a shutter and a crank-operated mechanism for moving the film down the space of one picture after each exposure. It is nothing more than a high-speed snap-shot camera which makes a large number of photographs every second.

Of necessity, the camera contains many refinements. For instance, the film is contained in light-proof retorts or magazines, so that it can be loaded into and taken out of the camera in broad daylight. When placed in the camera the film is threaded through the mechanism and down to a second machine, or "take up" magazine, which gathers in the film as rapidly as it is exposed. In focussing the image two methods are available—first, by looking through a peep-hole at the image on either the film-stock itself or on a piece of ground glass inserted in the light aperture; second, by a "guess focus" scale on the lens barrel, much after the manner of the ordinary hand-camera. The amount of film exposed is indicated on a dial, so that the camera man always knows how much film he has left. A punch, incorporated in the construction, puts a hole in the film after each scene, so that the laboratory workers may know where each scene begins and ends, and in this manner be able to cut the scenes apart and develop each scene separately.

Lastly, two movements are required—one for photographing at the standard rate of speed, and a second for photographing one picture at a time for trick effects.

The lens of the professional motion-picture camera is many times faster than that of the average still-picture camera. Indeed, it will make perfect pictures in the shade, and even in rainy weather it will turn out good pictures. In fact, the high-speed lens permits of making pictures in what the amateur photographer would call "impossible" places.

5,000 FORD AUTOMOBILES MADE DAILY.

The total production of Ford automobiles since the beginning of their manufacture

passed the six million mark on May 18, of this year. This gives a production of more than a million in the past year—the five-million mark having been achieved on May 28, 1921. This production is far in excess of that of any other automobile in the world.

Of this staggering total of six million cars and trucks, 5,518,000 have been delivered to purchasers in the United States alone, and the most recent statistics show that 4,478,248 of this number are still in daily service.

When consideration is given to the fact that the present type of motor has been in production for fourteen years, and that four out of every five Ford cars and trucks made during this period are still in actual daily service, the popular conception of the long-life of Ford cars is substantially borne out.

The daily production of the Ford Motor Company is now about 5,000 cars, the record one-day output of 4,878 having been achieved early in May, and on the previous working day 4,863 cars were completed.

The production for the month of May, of this year, totalled 130,000, and the estimated output for June has already been raised to 140,000, which is the greatest production output for a single month ever aimed at by 10,000.

The distribution of Ford cars and trucks throughout the United States is almost evenly distributed in relation to population in every State, with the eastern States with their densely populated cities to the western States with their sparsely settled communities. Eight States show a total of over 200,000 Ford cars and trucks in service—Ohio leading with 290,769.

The total of approximately 4,500,000 Ford automobiles in constant use means that there is a Ford machine for every five families in the United States.

During the past few months sales of Ford cars, both domestic and for export to all parts of the world, have been steadily increasing, and it is predicted that with the return of more stabilized world-trade conditions there will be a demand for the manufacture of at least 250,000 Ford automobiles monthly, and plans are already in the making by the producers to so enlarge their manufacturing facilities that they will be able to meet this demand.

INVESTIGATION OF "DUST EXPLOSIONS" DEMONSTRATED.

The National Fire Protection Association, located in Boston, Massachusetts, has just issued a most interesting and instructive

book on dust explosions, which contains the net results of over seven years' study and investigation by scientists of the United States Department of Agriculture. The book is being published in the interest of reducing fire and explosion losses, and it is expected to be a welcome addition to the all too meagre literature on the subject.

The work is being extensively called for by manufacturers and operators in dust-producing industries, owners of grain-threshing outfits, coal mine operators, owners of cotton gins, fire and accident insurance companies, inspection departments, engineers, architects, colleges and libraries, and many of the industries.

Upon request the book will be sent to readers of "Mysore Economic Journal" who are interested in the subject treated.

One of the numerous tables shows that in the United States there are now about 22,000 manufacturing plants of various kinds in which combustible dust is an unavoidable by-product. These factories and plants, always under the menace of loss through dust explosions, annually turn out products to the value of over seven billions of dollars. That there is widespread danger has been abundantly proved by the occurrence of disastrous explosions of dust of aluminum, coal, cork, cottonseed, flour, grain, leather, malt, phonograph records, rice, rubber, sawdust, spices, starch, sugar and sulphur. In all of these industries destructive dust explosions have taken place. The authors of the work mentioned above have fully investigated every notable dust explosion in the United States and Canada, many of which are fully explained and discussed in the new publication.

Chapters of the book are devoted to the nature and theory of dust explosions, industries producing dust and their extent, the elimination of the sources of ignition, prevention of explosions by control of explosive mixtures, phenomena of explosions, dust collection and removal, static electricity, explosions in grain-threshing machines, plant construction, cotton gin fires, coal dust explosions, and a general review of similar explosions, as well as explanatory matter bearing directly on the subject.

MARVELS OF THE RADIOPHONE WONDERMENT.

Suppose that in your own home, at any time, you were able to receive out of the air a summary of the important news of the hour, or you could hear a famous public speaker hundreds of miles away, or could enjoy a program of music by the world's greatest artists—and

suppose that all you required to enjoy a service of this kind was a compact little cabinet and a coil of ordinary wire, which you could operate almost as easily as you would a talking machine! If all that were a fact would you not agree that a marvellous new agency for spreading information and pleasure had come into being?

Well, all that actually *is* a fact in over 80,000 American homes, scattered over an area of about 10,000 square miles. A radio broadcasting service has been received nightly for the past few months on so ambitious a scale as to mark the dawn of a new era in communication.

Owners of radio receiving sets in the middle Atlantic States, and as far west as the State of Indiana, are now hearing regularly a rapid-fire service of news, lectures, and music organized by the Washington Electric and Manufacturing Co., in Newark, New Jersey. This service is already being rivalled by similar broadcasting enterprises planned by the Radio Corporation of America, and the General Electric Co., and is paralleled by many already existing broadcasting stations.

It is a safe assumption that, within a year or two, regular radiophone broadcasting stations will be in operation in the cities of St. Louis, San Francisco, Philadelphia, Denver, and elsewhere, so that the entire nation will be blanketed with hourly radiophone broadcasts.

What the pioneering Westinghouse Company is doing takes on national and international significance. Dwellers in remote solitudes will hear the friendly voices of their fellow-men; the prairie wife will sit at her sewing by the evening lamp and listen to a concert by master musicians in far-off cities; the sheep-herder and the miner and the farmer will be kept in constant touch with world affairs by cheerful human voices speaking out of the night.

From ten o'clock in the morning until ten o'clock at night vocal entertainment is being shot into the ether on an announced schedule. Eight times a day a resume of the latest news and world-happenings is broadcasted far and wide. National sporting events are vividly described, play by play. At night a bed-time story is told, and after that a concert programme begins. On every Saturday night a service of dance music is thrown into the air.

And then there's church service by wireless telephone! In your home you hear a sermon by a minister and music by a choir hundreds

of miles away. The pastor of the First Christian Church, of Oakland, California, demonstrated recently to the entire Pacific coast that radiophone preaching on Sunday is as entirely practical as preaching to the people in the church pews. Standing on the top of an Oakland building he delivered his Sunday morning sermon and conducted a complete church service by radio -- a service that was broadcasted to thirty-seven different congregations, and individual homes uncounted, in the State of California. These congregations were in towns within a radius of 300 miles. At the same time approximately 1,000 wireless telephone operators in various sections of the west, who customarily spend their Sundays tinkering with their apparatus, spend more than an hour at church!

Through the columns of a leading Oakland newspaper and by radio notice every radio telephone operator in the State equipped with a "loud speaker" was requested to make arrangements to install it at some church in his town.

On the Sunday morning set for the service, the pastor in Oakland, accompanied by a church quartette and musicians opened the service from the wireless station on the top of a high hotel building. Because the hour selected for the service was at a time of the day when radio traffic was practically at a standstill there was little or no interruption. Such as there was, was confined to code messages at sea and from the Honolulu station. There was one interruption, however; for a joke an operator turned loose a "jazz" record just following the playing of sacred music. The jazz was heard only in the churches and by listeners near Oakland, and was received with duly suppressed amusement, not altogether without excuse, by the congregations and listeners.

What six months -- or even a month -- may bring forth in radiophone progress is, indeed, hard to forecast, but we are prepared for almost anything.

The railway system of Guatemala is being extended by the construction of an electric line into the highlands of Los Altos. The current will be derived from hydraulic power. The cost of the undertaking is estimated at about £450,000, and this sum is to be raised by means of a special excise duty on *arguardiente* -- a spirit distilled in the Republic.



Views and Comments.

"BY ECONOMICUS".



According to a Press Report, the total approximate gross earnings of State Railways from 1st April to 10th June have fallen short of the estimate for that period by Rs. 201 lakhs. We are told that this is due to passenger and goods traffic on most of the principal railways having been below the normal expected. We ventured to prophesy, in these columns, that this might be the result of the recent enhancement of rates; we believe that the present rates are far too high for a poor country like India, and we hope the State, in the interests of its revenue as well as the prosperity of the people, will soon reduce the rates.

* * *

A most astounding principle of taxation was put forward recently by the Associated Chambers of Commerce of India and Ceylon which urged on Government the necessity of recognizing the equity of making provision for business losses when computing income-tax. This premier commercial body is of opinion that the State is a commission partner in every business to the extent of the percentage it takes in the income-tax and that to advance the principle that such losses must be recouped from capital seems to it to be entirely unsound, for if such a policy were accepted and followed by the trading community, so this body thinks, "the advancement of industry would be seriously handicapped and there would ultimately be a reduction in the revenue-producing power of the community." We are reminded of the days of the East India Company when the resources of the State were used to be employed for purposes of private trade to enrich the private purses of its shareholders. This is a most dangerous principle to follow. The State collects its tax *after* the income is earned, and rightly distributed, it should not be a burden on the industry. It is not true that "the State is a commission partner in every business to the extent of the percentage it takes in the income-tax." It is the custodian of communal interests and collects revenue for communal expenditure. If losses are sometimes to be made good from capital, the remedy is to set apart a portion of the profits as insurance when the business is thriving well.

Writing on the subject of "Dye Stuffs and Chemical Warfare" in the May number of this Journal, Sir Alfred Chatterton advised us as follows:—"Let India prohibit the importation of German dye-stuffs and she will strike a deadly blow at the German chemical industry and, even though it be at some cost to ourselves, the cost will be small compared with the enhanced security which must come from the weakening of the German chemical trade." We are sorry that some of the best English minds are drifting to, what may be called briefly, the pre-war mentality. A better alternative will be for England to produce her dye-stuffs as cheaply and as well as Germany, if she wants to retain the world market. In any case we are of opinion that the economic bond alone is too flimsy to bind together the heterogeneous elements known as the British Empire. We are, however, at one with Sir Chatterton in wishing to give natural indigo a real chance.

* * *

The demand for national self-sufficiency is increasing, and not decreasing, as a result of the war. Referring to methods of encouraging local industries, General Smuts announced recently in the Union House of Assembly (S. Africa) that "preference would be given to South Africans in connection with the electrification of the railways, and a bounty system would be instituted with the object of building up the iron and steel industry." The classical theory of international trade and of international efforts is almost discredited in the world to-day. The justification for this is that international relations have ceased to be so simple as the classical economists assumed them to be; concentration of production is so much favoured by modern methods of finance, conditions of work and transport that specific local areas and stationary peoples are likely to fare ill in the keen international competition.

Negotiations are proceeding between Czecho-Slovakia and Hungary to exchange corn for coal, the proposal being that 2,000 waggons of corn shall be considered equal to 1,000 waggons of Czecho-Slovak coal.

Presiding at the annual General Meeting of the Mining Federation, Mr. N. C. Sirkar, M.L.A., spoke recently as follows:—"Members of the Federation knew the bitter effect of increased wages. It failed to stimulate the desire for earning and acted as a direct incentive to increased idleness; and yet the demand for increased wages was loud and strong in all industries." We are willing to admit the evidence as substantially true since it is supported by almost all employers of large labour in India and countenanced by the Indian Industrial Commission. But we would ask the employers to give proper weight to the following considerations instead of only to the apparent psychological effect of an increased wage on the idleness of their employees. They must analyze, for instance, as to how much of this idleness is due to (1) insanitation in the factory; (2) congestion of the slum and intolerable housing conditions; (3) presence of preventable diseases and want of proper medical assistance; (4) insufficient and non-nutritious food, debt, inadequate wages and depressing conditions of life generally to which their employees are subject; (5) want of managerial ability and tact; (6) the migratory habits of factory labourers; and lastly, (7) excessive hours of work which, naturally (and legitimately in our opinion) induce the workers to snatch some leisure whenever they can. We believe the effect of the increased wage on the so-called "idleness" is only a minor factor and the remedy is the promotion of individual welfare and not the reduction of wages for labour.

* * *

A recent Government Communique states that in pursuance of undertakings given by the Hon'ble Mr. Innes in the Council of State and the Legislative Assembly, "Mr. H. L. Cole has been placed on special duty to inquire into the existing arrangements in India for technical education for railway employees, and to suggest measures for extending and improving them with special reference to the provision of facilities for training candidates for higher branches of railway working." It is an open secret that the existing arrangements are inadequate and that Indians are at a discount, for the real crux of the problem is racial. We hope that Mr. Cole will be able to report, *as speedily as possible*, that this racial distinction shall cease and Indians shall be encouraged to take up appointments in all branches of railway service. Nothing short of this will satisfy Indian opinion.

In a recent Government Communique we read as follows:—"The total amount of subscriptions to the Government of India Loan on the opening day (3rd July) amounted to Rs. 108,119,400." Time is past when India was used to be regarded as lacking in capital for large undertakings. Given sufficient security, capital will be forthcoming. In the light of this, and similar experiences during the war, it passes one's understanding why such a large proportion of our recent Railway Loan should have been raised in London and preference sought to be given to English firms in the matter of purchase of railway materials.

* * *

The Retrenchment Committee, Bengal, is asked to advise the Government on the following point:—"If in order to meet popular demands for larger expenditure on education, sanitation, agriculture and other similar purposes, it is decided to undertake a greater expansion of the activities of Government than has hitherto been possible, would it be desirable to relieve provincial revenues by devolving financial powers and responsibilities in local bodies?" We are of opinion that the time is come in the history of Indian administration for the Government to effect such a devolution of powers and responsibilities to local bodies and communal organizations in pursuance of the highest ideal of self-government as well as efficiency and economy.

The beginning of this year saw the substitution in Kenya of the shilling for the florin, which so recently replaced the rupee. In practice new coins are not yet being issued, the present pieces remaining as tokens pending the receipt of supplies of shillings and shilling-cents. Kenya is, as may be imagined, not enamoured of this constant tampering with the currency, but the introduction of a sterling basis has much to recommend it. The first practical application of the new *régime* was the notification of the banks that any cheques drawn in florins on or after January 1, would not be honoured though those outstanding from 1921 will be met as they are presented for payment. Postal rates have promptly risen with the alteration in the currency; for instance, post cards, which paid 6 florin-cents, are now 15 shilling-cents, and the inland newspaper rate has been advanced from three florin-cents to 10 cents, new style.

Economic Notes.

INDUSTRIAL, AGRICULTURAL, EDUCATIONAL AND GENERAL.

A remarkable step forward in the history of cinematography has been announced to the French Academy of Science. M. Bull has succeeded in photographing electric sparks whose duration was only 1-50,000th of a second. M. Bull employs a prism revolving 120 times a second. Images of sparks refracted by the prism are projected on a fixed film every hundredth of a second. Thus there are about 250 photographs of sparks per hundredth of a second.

* * *

Some idea of the burden imposed on France by the war, and by the fact that Germany has so far failed to pay even the cost of repairing the damage she wrought by her iniquitous aggression, may be gathered from figures drawn up by M. Loucheur, former Minister for the Liberated Regions, and M. Cheron, former Reporter to the Senate Budget Commission (now Minister for Agriculture) showing the present cost of reparations and war pensions. According to these figures, France will have to raise during the next eight years the following annual sums, in millions of pounds sterling, to meet charges under these two heads (the francs being taken at the normal rate of 25 to the £).

Year	Repara- tions	Pensions	Total millions
1922 ..	360	151 1-5	511 1-5
1923 ..	360	150 4-5	510 4-5
1924 ..	360	148 2-5	508 2-5
1925 ..	360	144 2-5	504 2-5
1926 ..	360	139 3-5	499 3-5
1927 ..	360	134 2-5	494 2-5
1928 ..	360	129 1-5	489 1-5
1929 ..	360	124 2-5	484 2-5

or a grand total during the eight years of 4,002 2-5 millions.

After 1929 the charge for preparations, if it is liquidated according to the above figures, will disappear from the French Budget or a grand total during the eight years of 4,002 2-5 millions, but there will still remain a heavy amount for pension. M. Cheron estimates that it will not be until 1991 that the cost of pensions arising out of the Great War will cease to be a charge on the French Budget.

Four experts are to consider the question of "double income-tax"—cases in which two countries tax the same source of income—on behalf of the League of Nations.

The experts are:

Sir Josiah Stamp, London University.

Professor Einaudi, Turin University.

Professor Seligmann, Columbia University, New York.

Professor Bruine, Rotterdam.

They will consider the economic consequences of double taxation; the possibility of formulating general principles for removing the evils resulting from it; and the prevention of fraudulent claims.

* * *

Although alternating current ceiling and desk fans, both single-phase and three-phase, have been on the market for some years, there is a distinct preference for continuous current fans, according to a note published by Mr. J. W. Meares, Electrical Adviser to the Government of India. The continuous current fans are, on the average, decidedly more efficient, as well as more silent and simpler to regulate, while costing less than their rivals. The type of fan, however, has hitherto been fixed by the nature of the supply; and in the future, with hydro-electric power looming large, there is likely to be a preponderance of alternating current supply schemes. At a recent conference the Punjab Government decided to encourage alternating current schemes in preference to continuous current, and it was noted that the difficulty over fans would probably be met by the use of small electrolytic rectifiers, which would convert so much power as was required in a house (for fans) from alternating to continuous current. It has now been ascertained that the Madras Electric Supply Corporation have already had this method under consideration for their outlying alternating current areas, and hope to introduce it shortly as the most efficient method of dealing with the fan load. From the central station point of view the very low power factor of alternating current fans is a great disadvantage.

The British Empire Producers Organization has initiated a vigorous campaign to impress the Government with the importance of assisting Empire sugar producers.

* * *

On the suggestion of the Automobile Association, Stonehaven Town Council have agreed to co-operate in celebrating the centenary, in June next, of the inventor of the pneumatic tyre, Mr. R. W. Thomson, a native of Stonehaven. Pneumatic tyres were invented in 1885 by Mr. J. B. Dunlop, whose idea, however, had been anticipated in the English patent taken out by Mr. Thomson in 1845. The Automobile Association have suggested that a memorial tablet should be placed on the wall of the house in Stonehaven in which Mr. Thomson was born.

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It is found by the Whitlock Coil Pipe Company, Hartford, Conn., who for about two years have been employing electric butt-welding for steel and wrought-iron pipe, that the time required to make the welds is practically dependent upon the current only, the higher currents requiring the shorter time and also giving the strongest welds the cost of a typical butt-weld in 1½ in. extra-heavy pipe was 15c., including labour, material, and energy. By the hand methods formerly employed approximately 45 minutes were required, as compared with an average of 38 seconds when butt-welding with 180 amperes. Another advantage of this method over arc or oxy-acetylene welding is that the original material is used for making the joint. In a number of tensile tests on butt-welds made at these shops the pipe was torn in every instance before the weld was damaged in any way. The butt-weld is made by cutting a female scarf in each pipe and then pressing the ends together under an oil pressure of five tons while the current is passed through the joint. As the current heats the ends to be welded the scarfed portions are forced outward and the area of the weld is increased over the annular area of the pipe. The inside of the pipe is left smooth and clean without any construction. The only objection is that the outside diameter of the pipe is increased at the weld, and it is thus impossible to use the pipe in spiral or other coils made on a former which is shaped to fit the ordinary outside diameter of the pipe. Lap welding, with a mandrel is employed where it is necessary to obtain a weld without any reduction of the bore or enlargement of the outside diameter.

Professor Robert Wallace, who has held the Chair of Agriculture at Edinburgh University for thirty-seven years, retired recently. Coming of a long line of Galloway farmers, he grew up amid surroundings which laid the foundations of his life's work. He was responsible for the institutions of the B.Sc. degree in Agriculture, which has attracted students to Edinburgh from all over the world, and in turn he has sent from his class-room young men trained in scientific agriculture to all the ends of the earth. In a valedictory speech the Professor recalled that he went to Canada as long ago as 1879, and was at Winnipeg before the railway, and that he has paid some eight visits to the United States — one of the incidental advantages of a Scottish Professor's long holidays. Dr. Wallace is an opinionative gentleman, who has figured in many fierce controversies, but his service to scientific agriculture entitled him to a long and happy retirement.

* * *

Asbestos has within recent times become a necessary commonplace rather than a laboratory curiosity as was the case a few years back. This is due to nothing but human inventiveness and mechanical craft, for which the highest credit is due to the Americans. In nature, asbestos occurs as a silicate mineral of the igneous rocks and is found mingled with, and superposed by, asbestos-bearing serpentine-rock. The mining of asbestos is no simple job, since it often necessitates a good deal of digging of earth by steam shovels and removal of the enveloping rock by blasting before the actual excavation of the productive pit can be proceeded with. When the serpentine rock becomes exposed, the use of mechanical drills and dynamite comes in. After the mining operations have been completed, the ore is hoisted out of the pits by means of suitable devices, such as derricks, lifts, etc., installed in shafts. The next process to which the stuff is subjected is what is known as copping or dressing. This is done partly by mechanical means and partly by hand dressing, the object being to detach the asbestos fibre from the serpentine. After further crushing, sorting and drying, asbestos is ready for the manufacture of various articles. The most familiar uses of this material are to be noticed as insulators, shingles, felt, floorings, table cloths, stove mats, curtains, roofing sheets, weather-sheds, mail bags for the aerial postal service, plasters, etc.

The number of workpeople involved in all trade disputes during the last month says the *Labour Gazette* for April, was about 280,000 as compared with 33,000 in the previous month and 45,000 in March 1921. The estimated aggregate duration of all disputes during March was about 3,500,000 working days, as compared with 316,000 days in February 1922, and 839,000 days in March 1921.

* * *

Sir Drummond Fraser, British banker, told the Advertising Club of New York of the international credit plan of the League of Nations, which he drafted, saying one of the first steps necessary to stabilize exchange would be removal of wartime trade values between countries. Americans, he said, would have to be educated to the necessity of lending money to the war-stricken lands. "By investing abroad the balance of trade can be restored," he continued, "but to do this Americans must have confidence in the ability of the European countries to make good." Foreign competition, "aided and abetted by Americans," was declared by United States Senator Ransdell, of Louisiana, to be one of the "underlying causes that are crippling the development of the American merchant marine."

* * *

One of the greatest difficulties that the Ceylon Medical Department has to contend with is the quinine scarcity in the island. During the war owing to the high price of this medicine, the authorities were put to extra expense. But the situation would have proved far worse, had it not been for the assistance received from a Ceylonese merchant in Singapore, who supplied Government with large stocks of quinine at reduced rates. Even to-day, the market price is much above that of pre-war times. This is largely due to a shortage of quinine all over the world; experiments have been carried out by well known scientists and medical men with the object of discovering a substitute for quinine. A Straits doctor has discovered that Java cinchona febrifuge is a splendid substitute for quinine. It will be remembered that the Legislative Council lately voted Rs. 1,50,000 for the purpose of purchasing fresh stocks of quinine. The *Ceylon Observer* learns that Government is considering the question of importing Java cinchona febrifuge with a part of the money lately voted, with a view to experimenting whether the new discovery would prove as a good substitute for quinine.

In the course of a recent address in Madras, Sir Sankaran Nair remarked :—"The railways in India are built and used to feed the great ports of Bombay, Karachi, Madras and Calcutta with foreign trade in the interests of import and export merchants.....They certainly do not afford our manufacturing industries the assistance they are entitled to expect from the railways." This is not the first time that such a damaging indictment is levelled against our railway policy. It is to be hoped that the Government will take up a really *Indian* point of view in this matter.

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According to the annual report of the Electrolytic Zinc Company of Australia, the first half of the Tasmanian plant, absorbing 15,000 h.p. of electrical energy supplied by the State Hydro-Electric Department, was put into operation in November last, and the full plant, utilizing 30,000 h.p., will be at work before the end of 1922. The energy will be delivered at 11,000 volts from the Hydro-Electric Department's stepdown station to the power house, which within a few months will be fully equipped with seven British Thomson-Houston rotary convertors of 3,000 kw. each, the appurtenances including a 25-ton electric travelling crane for the rapid handling of spare parts. A portion of the power will be transformed to 415 volts for driving the motors throughout the plant, but most of it will be converted to 530 volts direct current and delivered to the cell room, where some 750-800 tons of zinc cathode sheets will be produced weekly. The concentrates will be taken at the rate of 250 tons an hour by a 24 in. belt conveyor system from the ship's side to the storage place, whence an electric shovel with a capacity of 60 tons an hour will deliver them into trucks, which will be hauled by high-speed electric winch to the roasters. After calcination the ore will be carried by a belt conveyor to the leech plant. The zinc cast in the melting house into 50lb. slabs is taken by a chain conveyor to the wharf for delivery to steamers as required. The residues will also be delivered to the wharf for shipment to Port Pirie to be smelted for the recovery of lead and silver. It is expected that average grade residues will yield about 6,000 tons of lead and 1,100,000 ozs. of silver annually. When in full operation the plant will be able to utilize over 100,000 tons annually of Australian zinc concentrates, and produce 40,000 tons of metallic zinc (99.95 per cent pure) and 2,000 to 3,000 tons of zinc oxide.

The dam will be thrown across the river at a point where it flows through a deep gorge. The lake that will result from the damming of the river will be about 25 miles long and $\frac{1}{4}$ mile wide, and it is expected to be large enough to keep the plant working at its full rated capacity of 30,000 h.p., throughout the dry season. The estimated cost of the project is between \$3,500,000 and \$4,000,000.

* * *

Sugar estate owners and others engaged in the rum industry have been in conference with representatives of the Government of Jamaica on the subject of establishing a co-operative spirit factory to convert the contents of 8,000 puncheons of rum annually into motor spirit. The Government's proposal is that a loan should be raised to acquire and install a plant for the conversion of rum into motor spirits for use in the island. An expert from Glasgow is in the island advising the parties on the subject. In some quarters it is being urged that Government control of the industry is undesirable as it would be a commercial venture. The result of the conference will come before the Legislative Council which will meet at an early date.

* * *

The following Press Note dated the 26th May 1922, has been issued by the Government of India in the Department of Industries :— The Government of India have for some time been considering the possibilities of providing facilities for training Indian lads for responsible posts in the printing industry. It was the view of a conference of printers convened in 1912 that owing to the lack of such facilities full use could not be made of the openings which the printing trade afforded in this country, and it was hoped that it would be possible to meet the difficulty by the formation of a printing branch in one of the Technological Institutes, preferably Calcutta. Financial reasons, however, have rendered this plan impracticable for the present. Meanwhile the Government of India have initiated a scheme for the training of three apprentices in their Central Press at Calcutta; the course is to last three years, will comprise both practical and theoretical training and will be conducted under the supervision of trained European officers. Each apprentice is given a monthly subsistence allowance of Rs. 50 and on satisfactorily completing his training will be granted a certificate. The scheme was advertised, and three candidates have been selected for training from a large number of applicants.

After a number of efforts, the Dix River Power Company has succeeded in getting Congress to close the Dix River, a picturesque stream in Central Kentucky, to navigation, so that a dam and power-house may be built upon it. The plan is to build a dam 700 ft. wide and 235 ft. high, and to construct a hydro-electric plant for supplying power to Louisville, Lexington, and other neighbouring cities.

* * *

The Japanese Department of Agriculture has a trade information section the activities of which include the despatch of officials to important domestic centres for inspection purposes; the investigation of the causes of reduced demands abroad for Japanese goods; advice to manufacturers and exporters as to the development of trade; co-operation with commercial agents abroad in the study of economic conditions, in order that such agents may assist Japanese merchants to compete with those of other countries.

* * *

The Director of Statistics has issued summary tables showing the total area, area cultivated and uncultivated, area under irrigation, and area under different crops in British India in the agricultural year 1920-21. The total area of British Provinces (excluding Indian States) to which these tables relate is 621 million acres according to professional survey, or 618 million acres according to village papers. Of the latter area, 230 million acres represent uncultivable area comprising forests (88 million acres) and other area not available for cultivation (142 million acres); 115 million acres represent culturable waste other than fallow, and 61 million acres, the area left fallow during the year. The remainder, 212 million acres, was the net area actually sown during the year. If areas sown more than once be taken as separate areas for each crop, the total area sown in the year 1920-21 comes to 239 million acres, which is 16 million acres or 6 per cent less than that of 1919-20. The total area sown may be classified under the two main heads; food crops (197 million acres) and non-food crops (42 million acres). Except in regard to jawar and ragi, there was generally a decrease in the area under food crops. The total area under non-food crops declined by two million acres. This decrease occurred mainly in the area under cotton (—1 million acres), and linseed and rape and mustard (— $\frac{2}{3}$ million acres, each). The total area irrigated amounted to 49 million acres, which is nearly the same as in the previous year.

The use of tobacco by women has led to a great increase in the consumption of the drug, and a few words regarding the effects of its abuse may not be out of place. It must be remembered that there are several poisons in tobacco, the most deadly of which is nicotine. One-third of a grain of the latter is sufficient to kill a man. Fortunately for us, nicotine is as unstable as it is potent, and the heat of combustion of the tobacco is sufficient to render it volatile. There is no nicotine in the filthy mess which accumulates in a pipe, but some of the less powerful poisons are there. The effects of nicotine depend upon the amount of it that actually enters the blood, and this depends upon the amount of absorbing surface exposed to the smoke. Naturally the amount which can be absorbed from the mouth is almost infinitesimal compared with what the lungs can absorb, and that is the reason why inhalation of the smoke into the lungs is so undesirable.

* * *

The appointment of Mr. Hays to the supreme directorship of American motion picture production and distribution was marked by the establishment of a record in film-making. In 1 hour and 55 minutes a complete film impression of a dinner in his honour was made and exhibited, the scene having been filmed, developed, sub-titled, polished and finished to final perfection in that time. Experts made the film, and experts judged the results. The director was Herbert Vignola, the Cosmopolitan director, and Anita Loos, a famous American scenario writer wrote the sub-titles, and the pictures screened showed more notable motion picture figures assembled in one place than had ever been seen together. The occasion was marked by a brilliant speech by Mr. Hays in which he outlined his policy, "We accept," he said, "the challenge in the righteous demand of the American mother that the entertainment and amusement of the youth be worthy of their value as the most potent factor in the country's future. The motion picture industry accepts the challenge in the demand of the American public for the highest quality of art and interest in its entertainment. The industry accepts the challenge in the demand of the American youth that its picture shall give them the right kind of education and instruction." If the industry lives up to the ideals laid down in these remarks it will satisfy not only the youth of America but the youth of the world.

Hakim Mohammad Younis of Hyderabad writes to *Practical Medicine*:—The easiest and surest remedy for snake-bite is tobacco. About 5 tolas of tobacco should be mixed well with ten tolas of water and the liquid portion should be drunk throwing out the drugs. If the man bitten by a snake is senseless, the tobacco water should be poured down his throat, or if lock-jaw has set in, it should be passed through his nostrils. In about five minutes after the administration of the drug, the man will commence vomiting, and as the vomiting will go on, the effect of the poison will be removed and in about an hour the man will be alright. It is generally known here that no snake will pass through a tobacco field. Tobacco is the antidote for snake poison."

* * *

Mental tests were given to some 60,000 high school pupils in Minnesota by W. S. Miller, Professor of Psychology at the State University, and, according to public announcement, he has reached the conclusion that such tests are valuable only in a general way. Such tests, Mr. Miller says, may reveal any flagrant sub-normality or special ability, but they have distinct limitations. The Minneapolis Journal says that Mr. Miller even doubts the value of such tests in determining a pupil's ability to advance in school. The Journal says:—Many factors enter into such success beside mental ability and acumen. Application, energy and the ability of a student to manage himself away from parental guidance, make for success in school work even more than the ability to perform certain mental stunts. Moreover, such tests do not allow for growth. A student may be examined this year and fall short, but another year of experience and training may bring marked improvement. There is a type of youths who are slow to find themselves. They do not mature as rapidly as some of their fellows. To such, mental tests of the kind widely used to-day may do a great injustice. Valedictorians, it is proverbial, often fail to make conspicuous success in life. The elements of achievement in this work-a-day world do not all find their way into the school curriculum. Persistence, stamina, courage of convictions, and ability to deal with people are not comprehended in these mental tests. There is no short cut in training or finding the ability of them to discover themselves, and circumstances play their part to make or mar.

Professor Troupe, one of the world's foremost timber experts, has just given it as his opinion that in the near future Kenya may be not only the principal, but almost the only source of supply of pencil cedar, so greatly is the American production decreasing. The Kenya juniper, he says, is the largest in the world. This source of wealth is as yet almost untouched. Of the total area of Kenya only 1.5 per cent is under merchantable timber, with about 7.6 per cent of the productive land so occupied. Yet this authority has seen from a single mountain peak a valley in which £2,000,000 worth of timber has been destroyed by forest fires.

Since the beginning of this year the Uganda railway has reduced its rate per ton-mile for timber to 4½ cents., but much lower freights will be required before an appreciable export trade can be developed.

* * *

The Income-tax Assessment Act recently passed by the American Federal Parliament beneficially affects primary products and incidentally British investors holding shares in pastoral companies. Formerly, primary producers were taxed on the amount of their incomes the previous year. This practice caused a good deal of hardship at times because in a year in which a primary producer made least he often had to pay most. The Act provides for averaging the incomes for taxing purposes over a period of years. A quinquennial period is taken and it determines the rate of tax; but the amount of tax is determined by the actual income received in the year previous to the assessment. In other words, the average income for a quinquennial period determines the rate of tax; but the number of pounds on which that rate is paid is the amount of the actual income received during the year for which the taxpayer is assessed. When introducing the measure, the Prime Minister, Mr. Hughes, stated that the British system of averaging the income over a period of three years had given rise to a considerable criticism, not because of the adoption of the averaging system, but because the basis of liability was assumed to be identical with the measure of taxable capacity, which it was not. Therefore, in order that the inequity of the existing system should be removed, whilst at the same time having regard to those practical requirements inseparable from any taxation system, the quinquennial period had been adopted.

Notwithstanding the progress made by the United States in regard to glass manufacture, and even in spite of very high tariffs, there has been a huge increase in glass imports to that country during the year. The figures for the previous years were sufficiently alarming from their point of view, inasmuch as in 1920 the imports were four times those of 1919 and more than six times those of 1918. Manufacturers there are making strenuous efforts to alter this position, and keen cutting of prices is proceeding. There have been heavy economies in the cost of production and labour has had to make very serious sacrifices. As in this country, the workmen have not reached the full extent of the demands that will be made upon them in this direction. The evidence given by all parties before the Safeguarding of Industries Committee disclosed the fact that European exchanges are in such a state that competition is out of the question. The relief the trade is asking for will merely help manufacturers to reduce their costs by increasing production, and so reduce prices that shortly it may be possible to compete with foreign products.

* * *

H. M. Senior Trade Commissioner in India has written to the Department of Overseas Trade regarding the demand for perfumery and essences in that country as follows:—
“The principal perfumes for which there is a demand in India are the leading British manufacturers, such as otto of roses, white rose, lavender water, etc., and there is also a good demand for French perfumery among the European population; but the latter perfumes, such as eau-de-Cologne, etc., are on sale in London at a much cheaper price than procurable in India. There is a fair demand for Japanese perfumery from the higher-class Indian and Eurasian population in India. I have made local enquiries regarding the principal sources of supply of essences, and it appears that practically the whole demand is met by the United Kingdom and that there is a ready sale for well-known British brands; while there is also a certain demand for French flavouring essences which are used in the preparation of icing and confectionery; but these essences are imported direct by the leading confectioners and are not on sale in this market. The consensus of local opinion points to the fact that both perfumes and essences of British origin meet with practically no competition from other countries.”

Sponges are formed by groups of very tiny creatures. They are found in large quantities in the eastern half of the Mediterranean Sea, and are obtained by diving, dredging and harpooning. Recently attempts have been made to cultivate sponges artificially by means of planting out "cuttings."

* * *

"I heard a very nice little story of Sir Earnest Wild the other day," writes Mr. T. P. O'Connor in the *Sunday Times*. It occurred to him that as it must be his painful duty now and then to send men to Brixton prison, he ought to have a look at the place so as to form some idea of what he was sending men to; so he made a thorough inspection of the prison. This is the right spirit. "If I had ever been a dictator in this country" Sir Earnest is reported to have said after the visit, "the first thing I would have done would have been to send to penal servitude some of the judges of the period who so recklessly inflicted long terms of penal servitude for small offences; a taste of their own medicine would have been quite useful to them."

* * *

Though the price of sugar has fallen in the United Kingdom and most other countries, Government control in Australia continues to hold the local price at what might be termed famine level. Colonel Oldershaw, the Commonwealth Sugar Controller, is leaving for London to consult with the British Government on matters relating to sugar. His mission is also concerned with the disposal of Australian canned fruits and other products. Nothing is likely to be settled with regard to the extension or abolition of Government control of sugar until after the meeting of the Sugar Council, which will take place in Queensland at the end of February. The Council consists of two Commonwealth and two Queensland Ministers and representatives of the growers. Some of the growers, backed by the Queensland Government, are anxious that the Federal Government should renew the agreement under which the whole of the output of cane is purchased at a stated figure, but there is such pronounced opposition to a further extension of bureaucratic control that a new arrangement will probably be adopted. The Government are not likely to relinquish control altogether, for the sugar industry in Australia is their "baby", and unfortunately the child refuses to grow up. The industry has cost the Australian taxpayers many millions of pounds.

Harvard University is preparing to inaugurate a new era in intercollegiate debate by means of the radio-phone. In this way it will not be necessary for the college champions to travel, in some cases, thousands of miles in order to engage in these contests of eloquence and logic. They will simply, each in his *alma mater*, hold forth to a telephone instrument, which will transmit their arguments, and be heard as distinctly as though the contestants were speaking in the same hall.

* * *

Official figures published in France showing for the first time since the war the extent of French trade with the Colonies, indicate that 11.4 % of France's foreign commerce, in 1920, or in money value 6,611,000,000 francs, was colonial trade. The following figures received by the Bankers Trust Company, of New York, from its French Information Service, show the relative importance of exports and imports of the different French Colonies:

	Imports into France	Exports to Colonies
	(In million francs)	
Algeria ..	960	1,926
Tunisia ..	219	318
Morocco ..	152	494
Other Colonies ..	1,894	647

In 1910 France's foreign trade amounted to 13,407,000,000 francs, out of which 1,685,000,000 or 12.5 % represented colonial trade.

* * *

The General Education Board has indicated its approval of the work of New York University in a practical manner. Toward the \$1,500,000 required to meet outstanding obligations the Board has contributed \$500,000. This amount is to be used for immediate and pressing debts and is not to be added to the general endowment. The Board believes that the best way to help the University is to enable it to pay off its debts and that the endowment will benefit indirectly through the saving of interest. Subscriptions have been received for another \$500,000, leaving a similar amount yet to be raised. Of the more than eight thousand one-room school-houses in New York State, nearly half have an attendance of ten pupils or less. The following table presents the picture of these little buildings that were once the centres of neighbourhood life.

15 schools—av. attendance	1
167 schools—av. attendance	3
397 schools—av. attendance	5
3,600 schools—av. attendance	10 or less.

Economic Gleanings

WORLD'S PROGRESS IN FEW WORDS.

The Uruguayan Parliament has voted £15,000 towards the expense of participating in the Brazilian Centenary Exhibition.

Ratifications of the Economic Treaty between Belgium and Luxembourg have been exchanged. The convention came into force on April 1.

The Swiss electro-chemical works in the Valais, notably the French owned works at Martigny, which have been short of orders since the end of hostilities, started work again recently.

As the Belgian glass-workers in the Charlero district have agreed by 2,970 votes to 1,371 to accept the 20 per cent wage reduction proposed by the employers, there will be no lock out.

Wool exports from Uruguay last year totalled 56,866 tons, value about £6,300,000. The total value of the country's exports during that period was £14,000,000, as compared with £16,125,000 in 1920.

Japanese exporters are most active in the Chinese market and the Associated Japanese Chambers of Commerce in the Republic are using every effort to interest financiers in the Japanese-China trade.

The situation in the Swiss aluminium industry is improving slightly. Exports of aluminium last month were again satisfactory, although prices are very low. The calcium carbide industry is still depressed.

Cologne Municipal Council has sanctioned the plans of the city administration for permanent buildings to be used for holding the trade fairs. The building estimates total 152,000,000 marks (about £152,000).

The Bulgarian Ministry of Agriculture is endeavouring to substitute modern agricultural methods for those now in use. With the approach of spring ploughing contests will be organized among the farmers, and the use of motor tractors and motor ploughs encouraged.

According to the *Review of the River Plate*, the Uruguayan Government has received an offer from an Austrian bank to supply tramway electrification material in exchange for wool.

The possibility of employing rubber in the manufacture of high-class paper has created a deal of interest in Ceylon and the Government are about to make certain paper-making experiments.

The South African Government exhibit at the Leipzig Fair has attracted much attention, and many inquiries have been received by the London Trade Commissioner's representative at the fair.

The rubber road-paving experiments conducted in Colombo by the Ceylon Government and by some private firms and estates have not proved successful, the results being uneconomic or otherwise unsatisfactory.

The Canadian Bank of Commerce has issued its year-book for 1921, which contains the usual full review of business conditions in the Dominion and in the countries of the New World with which Canadian trade is principally conducted.

Although a German Consul has not yet been appointed in Palestine, pending the ratification of the mandate, a representative has arrived in Jerusalem and assumed his duties at the Spanish Consulate.

The United States Government has announced the establishment of a 2c. per ounce (or fraction of an ounce) rate on letters from the United States to Argentina, Brazil, Costa Rica, Ecuador, Jamaica, and Martinique.

Deposits of zirconite have been discovered in the Ratnapura district of Ceylon. Zirconite came into great prominence during the war, and is likely to prove of increasing utility. At present the principal source of supply of zirconite is the high plateau area in the State of São Paulo, Brazil, where the mineral sometimes occurs in huge boulders weighing several tons each.

The Austrian, Italian, Hungarian and Czechoslovak delegates at the Conference at Graz (Styria), who were commissioned to deal with passport questions, have agreed to the necessity of abolishing visas for travellers to their respective countries.

A telegram has been received from H. M. Legation at Rio de Janeiro stating that £300,000 is to be expended on port improvements at Sao Francisco do Sul. The Commercial Secretary suggests that firms interested should place themselves in communication immediately with Exmo. Senr. Director de Viacas e Obras Publicas do Estado de Santa Cattarina, Florianopolis, Brazil.

Owing to the heavy depreciation of the German currency many German manufacturers have informed their clients in Palestine of the cancellation of their orders made some time ago. In other cases merchants were informed by their buying agents in Germany and elsewhere that goods ordered previous to the depreciation had increased in price by 200 per cent and more.

A company is being formed in Cuba for the manufacture of metal articles, particularly tinware, hollow-ware, metal containers, etc., and the directors are prepared to consider the purchase of plant from the United Kingdom provided the prices and general efficiency of the machines render such a course desirable. The Department of Overseas Trade has further particulars.

Returns just published show that the total cost of constructing 102 miles of concrete roadway in Illinois, including cement and supervision, was very little in excess of 26,000 dollars per mile. Previous road construction worked out at an average of 39,000 dollars per mile. Altogether 390 miles of highways were built in the State last year and a further 630 miles are in hand.

Information has been received at the Department of Overseas Trade, concerning the formation of a syndicate at Belgrade for the development of hydro-electric power, in collaboration with the S. H. S. State Government. The first scheme is to erect near Modric a water-power station of 8,000 h.p. capacity and then to construct another station on the lower Drina between Koviljaca and Janje of 29,000 horse power.

A commercial treaty between Czechoslovakia and Spain containing the most-favoured-nation clause has been presented to the National Assembly in Prague for ratification. Spanish commercial men are visiting Prague, but the volume of trade in 1920, import and export, did not exceed £250,000.

The central hop bureau at Zatec (Saaz), where the best Czechoslovak hops are produced, has fixed the minimum price at Zatec (Saaz) at 3,000 to 3,500 Kc. a cwt., 2,600 to 3,100 at Ousteck (Auscha), and 2,800 to 3,300 at Roudnice. In English money this equals from £6 a cwt. at Zatec to £5 at Roudnice.

The proposal of the Australian Government for a conference to consider the industrial situation is condemned by the Australian Workers' Union, an organization which covers all the States. The employers are supporting the proposal, but the attitude of the larger trade union bodies is so uncertain that it is questionable if a conference can lead to any practical results. The hostility of the trade unionists has been brought about largely by the declarations beforehand of Mr. Hughes and many employers that a reduction in wages is inevitable.

At the public auctions of ostrich feathers last week (the first to be held since September) there was a good attendance of buyers, but owing to the large quantities catalogued, and the present unsatisfactory state of the market for manufactured goods, prices declined. Wings were 10 per cent to 15 per cent lower, whilst black and drab declined about 25 to 30 per cent. Floss were also lower to the extent of about 5 per cent. Good boos, however, sold well at firm prices, but the common sort were not in such demand, and there was a decline of about 20 per cent.

Prospects are favourable for a resumption of work at the Broken Hill mines. It is proposed to reduce the cost of production by an extension of working hours as provided in the "Edmund's" award. About 2,000 men left the town during the industrial crisis and some of these are beginning to return. Apart from these 2,000 men there are about 1,000 unemployed in the town at the present time. The companies are emphatic in stating that six out of the ten principal mines will remain closed unless an extension of hours or decrease in wages or both are agreed to.

Mr. A. Crawford has been re-elected Secretary of the South African Industrial Federation.

The Canadian Pacific Railway has inaugurated a monthly steamship service between St. John, N.B., and Jamaica *via* Boston and Havana.

The Uganda Chamber of Commerce is pressing the railway authorities to extend the pier facilities at Kibanga Port and to maintain regular services.

South Africa has decided to print its own postage stamps "when Government finances are in a better state," and a number of beautiful designs have been prepared.

The Kenya Flax Growers' Association will in future be carried on as an advisory body to the Government only. Mr. W. J. Dawson has been elected President.

An overland telegraphic service has been established between Cape Town and Mombasa *via* Tanganyika, Nyasaland and Rhodesia. The rates are cheaper than by the sea cables.

In view of the growing importance of livestock traffic, the general manager of the South African Railways states that designs are being prepared for double deck trucks for sheep conveyance, of which 20 will be ordered.

With a capital of £5,000, the South African Wool Company, Limited, has been registered to carry on business as wool brokers, merchants, salesmen, and agents, yarn merchants, and shipping and forwarding agents.

The new power station at Kroonstad (Orange Free State), which has been formally opened cost approximately £60,000. The annual output has grown from 75,000 units in 1905 to over 1,000,000 units last year.

In Cali, Columbia, competition for trade in fancy dry goods and ready-made clothing is keen. Merchants generally carry only small stocks, but their turn-over is rapid, and orders for limited quantities of a variety of goods are obtainable. A large business is transacted by parcel-post, as this provides fairly quick delivery. Duty on parcel post shipments is assessed on the value of the highest priced articles contained multiplied by the gross weight.

The Czecho-Slovak telegraph service is to be made a State monopoly.

The Banque Nationale Francaise du Commerce Extérieur, of Paris, is opening branches in Milan and Genoa. It will facilitate commerce between Italy, France and the French colonies.

The draft convention between Portugal and Italy for the exploitation and colonization of Angola has been practically settled in Lisbon. A mission of Italian experts will proceed shortly to Angola to examine its mineral and agricultural wealth.

The Cuban Government authorizes the free importation of iron containers for alcohol. The containers are required to have consecutive numberings indelibly stamped upon them, and in their turn will be duly marked in the Customs Houses in which they are received.

Movements are on foot in Java to stimulate domestic and village industries which, if successful, will create a demand for bench and post drills, treadle lathes, hand-power grinders, tin-smith's tools, abrasives, sewing machines, and other small tools and machines, bicycles, and motor cycles. Before the war there was a large and profitable trade in Java in German dyes.

A campaign is being inaugurated by American paper makers to obtain greater tariff and other protection for that industry. There are now 322 pulp mills and 818 paper mills in the country, with over a billion dollars capital. The figures for 1921 show a considerable falling-off in production, many of the grades being still 50 per cent below normal, whilst very few are working at more than three-quarters of their normal capacity.

Demand continues active in China for farming implements, including ploughs, harrows, and hand pumps for irrigation work. Walking or horse cultivators are replacing hand hoes; hand planters for broad beans will find a ready sale; small cotton gins will find purchasers, as only about 15lb. seed of cotton can be ginned per man per day with the gin that is now in general use. Manufacturers who correspond with Chinese agents should furnish detailed descriptions of implements, statements as to facilities for remodelling implements, and names of shipping agents.

Economic Reviews Reviewed.

WITH EXCERPTS AND COMMENTS.

The Trend of the Mineral Industry of India.

Mr. Cyril Fox, B.Sc., M.J.M.E., F.G.S., an officer of the Geological Survey of India, contributes to the *Mining Journal* (London) an interesting article on the above subject. We take the following from it :—

The publicity which has been given to Indian affairs lately has drawn attention to the great scale on which developments are taking place in that country. Those who have business interests in India are aware of the enormous industrial and commercial progress which has been made. They will also know how seriously India has been affected by the economic depression which has prevailed almost everywhere for the last eighteen months; and they, possibly, have reason to appreciate the extent of the trade dislocation which has been caused by the fluctuating value of the Indian rupee which first forged up to 2s. 10d. in February 1920, and then slumped down to 1s. 2d. in the following year. In these circumstances a feeling of uncertainty and anxiety has generated an atmosphere of unrest, which is being actively fomented by pernicious agitation. In spite of this growth of unrest, numerous industrial enterprises—some on an enormous scale—are being launched by firms who are fully alive to the trend of affairs in India, and who are respected for their business sagacity and trustworthiness. Consequently, it may be both interesting and illuminating if a brief account is given of the developments which are taking place in the mineral and metallurgical industries of India.

Although the early history and subsequent progress of the mineral and metallurgical industries are of great interest, their story lies beyond the present scope of this paper. The precious metals and gem stones, the coal and metalliferous ores, and various other mineral substances of economic importance, which have already been worked and won, are, in a sense, lost. The mining man addresses himself to the present and the future; he is concerned with what mineral wealth yet remains in the country, with what is being actually done in the development of their natural resources, and he endeavours to foresee the demands of the future.

The most valuable sources of information with regard to the subject under treatment are various publications of the Government of India. In 1917 a comprehensive compilation, titled "An Annotated Index of Minerals of Economic Value" (together with an elaborate Bibliography) was prepared by Mr. T.H.D. La Touche, a retired member of the Geological Survey of India. This work gives details of the mineral occurrences of India. Information regarding the annual production of minerals from mines and quarries in India is published by the Director of the Geological Survey of India and by the Chief Inspector of Mines in India. Further statistical information, dealing particularly with trade, will be found in monthly and yearly publications of the Department of Statistics, India. The most recent available statistics regarding

the production and trade in mineral and metalliferous substances are shown in the accompanying table. These figures will give an idea of the scale and proportions of the Indian mineral industry.

COAL.

The coal industry is, perhaps, the most important of the mineral industries in India. The demand for coal has increased so rapidly of late that some apprehension has been caused by the recent serious decrease in production. The total raisings in 1919 were 22,628,000 tons, whereas the output in 1920 was 18,321,000 tons, and judging by the large quantities of coal which have recently been imported it would seem that there has been no subsequent improvement in the important coalfields. The chief cause of this diminished output is due to the fewer working hours and disputes over demands for higher wages by the Indian miners. The outturn per head (above and below ground) had fallen from 111.1 tons in 1919 to 94.4 tons in 1920, and was probably less in 1921. The need of a true mining population is being felt more severely each year as the workings get deeper. The Indian miner of to-day is still an agriculturist, and goes off periodically to attend to his fields. The inadequate railway facilities are another factor; they constitute one of the greatest industrial problems in India. The subject is, however, dealt with later. Although only 1 cwt. of coal is consumed yearly per head of the population much appears to be wasted; nearly 14 per cent of the total coal raised from the mines is absorbed at the collieries, less than 9 per cent is at present utilized for metallurgical purposes, 37 per cent is consumed on Indian railways—and even this large percentage is not enough, as there is a continued use of wood fuel (215,000 tons in 1920-21) and an increased Consumption of oil fuel (63,828 tons in 1920-21), chiefly on railways in Southern and North-Western India respectively.

Although coalfields or beds of lignite occur in various parts of India—in Assam, in the Darjeeling Himalaya, in Jammu, in the Salt Range, in Baluchistan, Bikanir, Travancore, Madras (Pondicherry), Hyderabad, in several places in the Central Provinces, in Burma, and in the Damuda fields of Bengal and Bihar—nearly 90 per cent of the output comes from the so-called Bengal coalfields of Jherria, Raniganj, and Giridih. In many of the areas named the local requirements are not met; in others, the coal is unsuitable for the production of coke, and in some cases no serious attempt at mining has yet been made. The great coal region of India lies in the Damuda valley area of Chota Nagpur and Bengal. In consequence of the cheapness and good quality of this coal this region has rapidly become of great industrial importance. Iron and Steel Works have been and are being established, and other satellite enterprises are growing up in the neighbourhood.

Since January 1920 several important mining enterprises have been registered in India as joint stock companies. The more important concerns are:—(1) The Bengal Coke and Coal Products (registered February 1920 with 25 lakhs of rupees authorized

capital). (2) The Karanpura Development Co., (registered July 1920 with Rs. 40 lakhs authorized capital); there have also been floated no less than twelve Karanpura coal companies, each with Rs. 20,000 authorized capital). (3) The Trans-Adjai Collieries (registered August 1920 with Rs. 20 lakhs authorized capital). (4) The Lodna Colliery Co. (1920) (registered December 1920 with Rs. 20 lakhs authorized capital). (5) Coalfields of Burma (registered January 1921 with Rs. 30 lakhs authorized capital). (6) Talchir Coal Field (registered November 1921 with Rs. 40 lakhs authorized capital).

It is thus seen that great movements are taking place, as in two cases, the Talchir Coalfield and Coalfields of Burma further away, entirely new areas are being opened up. The importance of developing distant areas cannot be estimated. At present the only good coking coals are obtained from a few of the Damuda coalfields, and much of this valuable fuel is being utilized for purposes in which a non-coking coal would, perhaps, be more serviceable. However, the need for conservation of this coking coal is fully understood, particularly in view of the great iron and steel industry which is beginning to grow up on the southern borders of this coalfield. The many coalfields of Burma have so far not been seriously touched, although coal is actually transported to places where local coal of good quality could economically displace the imported coal. There are several coalfields in the north-east corner of the Central Provinces which cannot be worked because they have no railway facilities. The lignites of Pondicherry and Travancore and the peat of the Nilgiri hills have almost been forgotten. In these days, when industrial development is starved because of fuel for power purposes, the country's resources and demands for fuel are being carefully studied. The urgent need for better transportation is fully realized, but, to meet the requirements of the country, enormous sums of money are necessary.

IRON AND STEEL.

The iron and steel industry of India is in its infancy. In view of the developments that are taking place, and from a knowledge of the vast deposits of high grade hematite in the belt of country from Mayurbhanj State westward to the States of Keonjhir and Bonai and the Kolhan subdivision of Singhbhum, this industry must eventually become of very great importance to India. Although much has been written of the Bihar and Orissa iron ores, it is, perhaps, not fully realized how immense are the quantities of available high grade ore. Both the quality and quantity of hematite in this part of India are calculated to exceed the great American deposits of the Lake Superior region in Minnesota, Wisconsin and Michigan.

Although there are, at present, only two large iron works which are producing iron and steel in India, a third is rapidly being erected and others are projected.

Tata Iron and Steel.—Of the existing companies (1) the Tata Iron and Steel Works are established at Jamshedpur, in Singhbhum (B. & O.), a few miles north of Tatanagar, on the main B. N. Ry. line to Bombay. Originally, this company relied on the iron ores of Gurumashisni (Mayurbhanj State), but the neighbouring deposits of Okampad and Badanpahar are being opened up. They obtain their limestone from Gangpur State, where there are two occurrences, near Panposh and Bisra. Although the quality of this flux is very good, the material is not cheaply obtained. The rock is not quarried, but mined, and,

as may be imagined, the limestone question has not yet been satisfactorily solved. Their coke is made from Jherria coal. The production of these works has been (1919-20 exports from Jamshedpur) 50,000 tons of pig iron, 75,000 tons of steel rails, and 60,000 tons of bars and girders, valued in all at 5 crores of rupees. Two more blast furnaces capable of producing 1,000 tons of pig iron a day, a new duplex steel plant capable of an outturn of 1,000 tons of ingots a day, and mills for plate, sheet, bars, and rail and structural work, have been erected, and are practically ready for blowing-in and working.

To utilize the finished iron and steel products of their mills a number of subsidiary companies are being established at Jamshedpur: The Calcutta Monifieth Works, for the manufacture of machinery for the jute industry; the Enamelled Ironware, Ltd., for the manufacture of domestic utensils and other types of goods; The Tinsplate Company of India; the Agricultural Implements Company; the Indian Steel Wire Products, Ltd; the Enfield Cables Co.; and the Hume Pipe & Construction Co.

(2) *The Bengal Iron Co., Ltd.*, have their headquarters at Kulti on the Bengal side of the Barakar river. They obtain their iron ores from North-West Kolhan (a subdivision of Singhbhum) and Keonjhir State. The coke is made from Jherria coal and from the company's collieries at Ramnagar, near the works. Most of their limestone comes from Sutna (Rewa State, in Central India), and partly from Bisra. They produce daily about 450 tons of pig iron, but utilize most of this in making castings of special types, chiefly railway sleepers and chairs. It is not clear when this company propose to re-establish their output of ferromanganese.

(3) *The Indian Iron and Steel Co.* are erecting works at Hirapur, on the railway between Asansol and Adra in Bengal. They will be supplied with iron ore from Gua in Kolhan, along the new railway extension, which leaves the main B. N. Ry. line at Amda and passes through Chaibassa to Jamda. The flux (limestone) is obtained from Gangpur State, and the coke is to be made from the coal of the local fields. At first the company will restrict itself to the production of pig iron, the present plant being designed for a daily output of 600 tons.

In addition to these there are a number of new companies.

(4) *The United Steel Corporation of Asia, Ltd.* was registered in India in December 1921 with a capital of £10,000,000, at 6½ per cent, by Messrs. Bird & Co., of Calcutta, and Messrs. Cammel Laird of Sheffield and London. The works are to be erected at Manoharpur. A new railway line is to connect the works northward, through Hesla, with Hutar and the Karanpura coalfields. The iron ore will come from the Keonjhir-Bonai area, and the limestone, probably, from the Gangpur region. The immediate erection of plant capable of producing 300,000 tons of pig iron and 200,000 tons of finished steel annually is contemplated. This output will later be increased to 700,000 tons of pig iron and 450,000 tons of finished steel. The erection of the works will be carried out in three stages of development, during which the B. N. Ry. will have to provide additional rolling-stock on the following scale: First stage, 492 waggons with 9 locomotives; second stage, 4,311 waggons with 74 locomotives; third stage, 7,723 waggons with 139 locomotives.

(5) *The Eastern Iron Co.* is to be erected in the

vicinity of the Jherria coalfield, and will obtain its supplies of ore and flux from much the same localities as the Indian Iron and Steel Co.

(6) *The Kirtyanand Iron and Steel Works*, near Sitarampur in Bengal, is to be established for the production of iron and steel castings in a smaller way.

When these several companies are in working order they would have a total estimated output of 1,500,000 tons of pig iron and 1,000,000 tons of steel annually. Production on such a scale will result, obviously, in the erection of mills for the outturn of finished iron and steel materials, such as sheets, plates, bars, joists, etc.

Messrs. Thornycroft have already established a works in Calcutta, and various existing firms, such as Messrs. Burn & Co., etc., are capable of carrying out steel structural work on a large scale. Other engineering works for the manufacture of machinery, such as the various railway waggon and locomotive shops, are enlarging the scale of their operations, and new enterprises are certain to follow with the revival of trade.

MANGANESE, TUNGSTEN, CHROME, TIN.

Manganese.—India has peculiar advantages for the production of finished iron and steel on an immense scale. For years she has been one of the largest exporters of manganese ore to Europe (see Table). This ore has sometimes been sold for prices which, although more than double the value of the material in India, have barely paid expenses owing to the heavy transport charges. With the erection of steel works in India, a far more advantageous market for Indian manganese ore will be created in that country. The large stocks of manganese ore, which have been accumulating in certain parts of the Central Provinces for several years, cannot be placed on the market owing to the high cost of transportation and an absence of railway facilities. One of the two existing large iron works in India made ferro-manganese for Government purposes during the war, and although they have since discontinued the manufacture of this alloy, it is most probable that the large scale manufacture of this important ingredient for steel making will be re-established.

Tungsten.—In addition to the manganese ore large quantities of wolfram or tungsten ore have for the past ten years been shipped to Europe and other countries from Burma. Like manganese ore, the demand for this raw material, wolfram, has depended on the requirements of makers of special steels. The recent dislocation of the iron and steel industry in the United Kingdom which resulted from the coal strike is clearly reflected in the exports of wolfram from Burma. A heavy slump has occurred, and though prospects are now improving every day there is still cause for great anxiety. A steel works for the production of high speed tool steel alloys in India would have very great advantages, but the establishment of such a company is a matter of the future. At present producers of wolfram are burdened with stocks for which there is no demand at reasonable prices.

Chromite.—Although the Indian exports of chromium for 1921 are much less in value than the previous year, the amount produced from the mines is not proportionately less. There has, however, been a diminution in the quantity exported. The Indian production, obtained chiefly from Baluchistan, Mysore, and, in a small way, from Singhbhum, is almost entirely exported. Small quantities of high grade ore have been utilized in the manufacture of chrome chemical compounds, and some experiments have been made

with a view to the manufacture of chrome bricks as neutral refractory material for furnaces. However, there is hope that with the manufacturing developments which appear likely to follow the erection of the projected iron works, the demand in India for such domestic raw materials as chromite, etc., will increase.

Tin.—In spite of the fact that the prices of tin and tin ore have seriously fallen since the boom period of the war the production and export of tin and tin ore from Lower Burma has steadily increased (see Table). The erection of a tinplate works at Jamshedpur by the Tinplate Company of India marks a new phase in this branch of industrial development.

Several important firms have established their interests in the tin and wolfram industry of Mergui and Tavoy, and as a result modern methods of mining the mineral veins have been introduced. The hydraulic-ing of gravels and the dredging of alluvial deposits are being instituted. Up-to-date mills, equipped with elaborate ore-dressing plant, have been erected, and smelting furnaces are in operation.

GOLD, SILVER, LEAD, ZINC, AND COPPER.

Gold.—The precious metals, gold and silver, have long been regarded as commodities by the people of India, who invariably invest their savings in jewellery and domestic utensils made of gold and silver. Indian merchants frequently fix their own ratio between the values of gold and silver, irrespective of the currency. They regard the coin of the realm as bullion rather than as currency, the imprint of the die being looked upon as the official certificate of the genuineness of the metal. In 1920 the Government of India removed the prohibition against using gold and silver coin otherwise than as coin. The Indian Currency Committee have recommended in 1920 that the rupee should have a fixed exchange value equal to 11.30016 grains of fine gold—that is, one-tenth the gold contents of the sovereign. This ratio has since been adopted, and public sales of gold on this basis have now been permitted. For many years prior to the above-mentioned changes practically all the gold obtained from Indian mines was sold by agreement to the Government of India. The arrangement was discontinued in 1921, and the gold produced in India is now available in the open market.

Gold mining in India, judged by the value of the annual production, which is nearly £2,000,000, ranks second in importance to the coal industry. The yearly production of gold in India has, however, steadily decreased during the past few years. The value, calculated at £4 4s. 11½d. per fine ounce of the Indian output of gold is estimated at £1,700,000 in 1921, as against £1,900,000 in 1920 and £2,200,000 in 1919.

Nearly 90 per cent of the Indian output of gold is obtained from the Kolar group of mines in Mysore State. Among the most important of these are the Mysore Gold Mining Co., Ltd., the Champion Reef Gold Mining Co. of India, Ltd, and the Ooregaum Gold Mining Co. of India, Ltd.

Silver.—Except for trifling amounts of silver from the Anantapur gold mines in Madras, practically all the silver obtained from mines in India is extracted from the argentiferous galena of the Bawdwin mines of Burma. The output of these mines during the last three years has been ;

			Refined lead. (tons)	Fine silver (ozs.)
1919	..	..	18,535	2,164,856
1920	..	..	23,821	2,869,729
1921	..	..	33,694	3,827,904

The programme of the output of these mines is based on an annual production of 45,000 tons of refined lead and 4,500,000 ozs. of silver, requiring a daily supply of 700 tons of ore. The proved ore reserve is estimated at 4,000,000 tons assaying 23.3 ozs. of silver per ton, 25.3 per cent lead, and, 17.7 per cent zinc. This ore-body also contains 300,000 tons of copper ore, assaying 23.2 ozs. of silver per ton, 12.8 per cent lead, 7.7 per cent zinc, and 11.0 per cent copper. The promoters of the company (Burma Corporation, Ltd.), who control the Bawdwin mines, have decided to develop from their existing financial resources, and for this reason have abandoned the projects for erecting zinc works and manufacturing sulphuric acid in India. They have decided not to erect the new lead smelter, and for the time being are not developing the 20-foot seam of good quality lignite which they proved in the Namma coalfield. Their difficulties as regards a suitable iron stone flux for smelting have been satisfactorily solved by the discovery of a large deposit of ironstone near Wetwun. The labour problem, however, yet remains. The local Shans are unsatisfactory, and imported labour is difficult to get cheaply. The Chinese workers from Yunnan have so far not been sufficiently attracted to the mines to settle there; they regularly migrate to their homes each rainy season.

Lead.—There is a considerable demand in India for lead sheeting for packing purposes, particularly for lining tea chests. Most of the lead for this purpose is supplied from the Bawdwin mines. Over and above this demand a large amount of Bawdwin lead is exported to foreign countries. The manufacture of red lead, white lead, and other lead pigments has been contemplated, especially in view of the fact that the lead ores occur in association with zinc blende and barytes, both suitable for conversion into excellent paints-making pigment.

Zinc.—The Trade Returns show that nearly 1,000 tons of spelter were exported from India during the year 1921. This metal appears to have been accumulated imported stock, which has now been re-exported. The Bawdwin mines have not yet produced any zinc on an industrial scale. Large quantities of zinc ore, however, are accumulating at Bawdwin. An outlet for this stock will be found when the projected steel works in India erect plant for the manufacture of galvanized iron sheeting. The presence of a large amount of copper ore in the Bawdwin lode naturally suggests the local manufacture of brass and brassware.

Copper.—Although no copper has been produced at Bawdwin for marketing, the prospects for such an output are good. Nearly all the Indian production of copper is obtained from the Rakha Hills mines of the Cape Copper Co., Ltd., in the Province of Bihar and Orissa. The outputs of copper from the workings in 1920 and 1921 were 530 tons and 829 tons respectively of B. S. ingots. The proved ore reserves of these mines are estimated at 300,000 tons of ore, assaying 3.74 per cent copper. Much development work is being carried out, and further quantities will possibly be proved as the result of the exploratory drivages which are in progress. The Cape Copper Co. have granted a working option of several square miles of their prospecting area to the Cardoba Copper Co., Ltd., who contemplate prospecting the Rakha lode further to the west. There are no important companies in India which manufacture copper goods on an extensive scale, so that much of the copper that is produced is likely to be exported, unless a demand is created.

MICA AND MISCELLANEOUS INDUSTRIES.

Mica.—The mica industry is passing into more and more healthy channels. Since the war the demand for the smaller sizes of mica has continued; consequently there is far less waste at the mines. The manufacture of micanite and various finished articles made of mica has become an established industry in the mica mining area of Chota Nagpur. Further attempts have been made to utilize the large quantities of waste mica both at the mines and the dumps of the trimming factories. The grinding of Indian muscovite mica to fine powder has so far not proved a commercial success. The exports of Indian mica have for several years been in excess of production, showing that the production of recognized firms working in the area is supplemented by the output of other workers in the mica belt.

Miscellaneous.—The *monazite* sand of the Travancore coast and the occurrences in certain rivers in Upper Burma are receiving attention with a view to steady production. A number of inquiries have been made regarding abrasives, such as *corundum*, *garnet* etc., but as these substances require crushing and grinding and careful grading for the market, which the small owners are unable to do, the trade has almost ceased. However, with the establishment of suitable plant in India, it is possible that preparation of *corundum* and *garnet* for abrasive purposes will once more be revived. Numerous other minerals are being developed. *Asbestos* of good flexibility and long fibre has been found in Chota Nagpur, and is being utilized in a small way. The various occurrences of *graphite* in South India, although producing somewhat impure graphite, have become important in view of the success of the electro-osmosis process in removing the impurities. The discovery of *sillimanite* in large quantities in India has opened a new field in refractory materials, particularly for the glass industry. The occurrence is being exploited, and numerous experiments are being conducted in England with a view to ascertaining the best form in which this mineral can be used.

The expansion of several important companies recently and the appearance of new enterprises indicates activity. A very large *cement* company, the Central Provinces Portland Cement Co., Ltd., (registered in India in 1919 with an authorized capital of 1 crore of rupees) has recently erected its works on the Vindhyan limestone outcrop in the Jabalpur district and the plant should now be in working order. Another large company, the Katni Electric Cement Works, has been quite recently registered with an authorized capital of 40 lakhs of rupees. The existing cement works — i.e., the Katni Cement and Industrial Co., etc., have not been able to meet the enormous and increasing demand for cement in India.

The manufacture of *Refractory Materials* for furnaces — e.g., fire-brick, silica brick, magnesite brick, and bauxite brick, etc., is becoming more and more important every year. The Kumardhubi Fire-Brick Works in Chota Nagpur, the Raniganj and Jabalpur Pottery Works, and the new companies now in process of establishing their factories, will not meet the demands of the new country. The supply is not nearly adequate enough in several types of refractory materials.

The *Chemical Industry* is slowly forging ahead in India owing to the vast mineral assets of the country and the steadily increasing demands for chemicals. The *glass industry* has entered on a new phase. Many works are being reorganized, special machinery for

making bottles, hollow ware, sheet and plate glass, etc., are either being installed or are in operation. The question of establishing works for the manufacture of *mineral pigments* for paint-making has been repeatedly considered. Paint works already exist in India, but the scope of their operations is limited to a few varieties of pigment.

A *Coal Tar Refinery* has been established near Calcutta for the purpose of utilizing the tarry fluid obtained by the distillation of coal in coke ovens and gas retorts. Large quantities of *Ammonium Sulphate*, obtained as a by-product of coke manufacture, are now shipped as manure to Java, to the very sugarcane growers who export sugar to India.

The *Oil Companies* in Burma and Assam and the Punjab continue to investigate fresh areas and enlarge their existing facilities. Practically all the paraffin wax and petrol obtained in the fractional distillation of crude oil are exported, whereas the kerosene, which is obtained in large quantities, is insufficient to meet the requirements of the people of India.

INFLUENCE OF LABOUR AND TRANSPORTATION.

These two factors are naturally of prime importance in considerations of industrial development. For years the cheapness of labour in India has been a by-word, chiefly among people who have not employed Indian labour. The price paid per head per day is small, but the amount of work done is nearly proportionate to the wage. Most of the labour is unskilled, and obtained from hereditary agricultural classes. It is only in recent years that appreciable numbers of skilled mechanics are becoming available. In very many cases the indigenous population is unsuitable for steady work, and labour has to be brought from other parts of India. The approach of the season for ploughing or harvesting, usually the period at the beginning and end of the rains, invariably results in a gradual disappearance of all unskilled labour. They migrate to their homes to attend their fields. However, in the large industrial centres, such as the Bengal coalfields and big cities like Calcutta and Bombay, more or less permanent communities are being evolved. These people are beginning to grasp some of the ideas of modern labour. They understand their importance, but do not realize their growing responsibilities in the same way. In several instances strikes have resulted from trivial disputes and caused widespread disorganization. They have no powerful trade unions as we know them in England and other countries. This is a problem which, however, confronts every undertaking of importance in any country, although it may be somewhat more acute in India. Careful treatment, attractive employment, necessary watchfulness against misunderstandings, and regard for their welfare, must result in the building up of contented communities in India and anywhere else.

Railway Developments.—Another factor which has long affected industrial development in India is that of transportation. It is sometimes impracticable to work a mineral deposit because, on the one hand, of the enormous cost of transportation to a railway, and, on the other hand, an inability to procure sufficient waggons to meet the demand of an attractive market. In the evidence taken by the committee appointed by the Secretary of State for India to inquire into the administration and working of Indian railways (1920-21), the following ominous passage occurs (page 7): "We, therefore, summarize extracts

from the mass of evidence we have received, showing that the failure to meet the needs of the country is not temporary and confined to certain places or to certain periods, but universal and permanent." It is quite well known that, "owing to the want of transport facilities, coal raisings have frequently had to be curtailed." Also it was estimated that "the Tata Iron and Steel Co. had probably lost from 3 to 5 per cent of the production during the year 1920 because of the congestion on the railway."

However, all this is to be changed. The recommendations of the railway committee have been approved by the Government of India. An expenditure of 150 crores of rupees (£100,000,000) is to be devoted to Indian railways during the next five years. The first 30 crores will be allocated as follows: Half for the duplication of existing lines, remodelling of station yards, strengthening of bridges, and the opening up of lines to certain coal areas; the other half will be devoted to rolling stock — half of this for passenger carriages and the remainder equally for locomotives and goods waggons. It is significant that the Government of India appeared on the London market only last December in the role of borrower for a loan of £10,000,000. This money is to be entirely spent on the rehabilitation of Indian railways. The utilization of these moneys for railway purposes will not be affected in view of the serious deficit which has been forecasted in the Indian Budget for 1922-23.

Meanwhile something definite is being done. Surveys have been sanctioned or actually completed over several alignments, and in the more important cases new lines are in course of construction.

The East India Railway have surveyed a new main line from the neighbourhood of Asansol, in Bengal, up the Damuda valley, through the Jherria, Ramgarh, Bokharo, and Karanpura coalfields to the valley of the Sone River, in the vicinity of Daltonganj. This line is to be continued up the Sone Valley, westwards into Rewa State, and onwards to Katni, to connect with the present main line from Calcutta to Bombay. Such an alignment, besides considerably reducing the distance to Bombay, will open up a difficult tract of country, in which coal, bauxite, limestone, corundum, and other minerals are known to occur in workable quantities.

The East India Railway have also sanctioned the survey of another line, about 100 miles long, from Hutar, near the Karanpura coal-fields, southwards to Hesla and the proposed site of the projected steel works of the United Steel Corporation of Asia.

The Bengal Nagpur Railway intend to build a line 65 miles long from near Cuttack westward up the Mahanadi valley to the Talchir coalfield. They have already surveyed the alignment of another proposed line. This is to be built from Raipur, in the Central Provinces, south-eastward through the Kalahandi country of Orissa, to connect with their Madras line near Vizianagaram. While this line is being constructed they contemplate establishing an up-to-date harbour at Vizagapatam so that the two schemes are finished at the same time.

A definite attempt is also to be made to open up the great land-locked region of Sirguja and Western Chota Nagpur. The Bengal-Nagpur Railway made a survey from west to east across this tract, and have now sanctioned the construction of a line from Sahdol, on their Bilaspur Katni branch eastwards to the neighbourhood of the Korea coalfield and the coal-bearing tracts of the Sirguja basin, and into the Ranchi

district, to connect at Lohardaga with their narrow gauge line from Purulia to Ranchi and Lohardaga.

Other areas, such as the Satpura tracts of Betul, Chhindwara, Balaghat and elsewhere in India and Burma, have also been receiving attention, either by the appointment of a special railway officer or the sanction of railway surveys.

TRADE.

For decades the total value of India's trade has steadily increased. During this period the value of her exports has been considerably greater than the value of her imports. Year by year, this difference to India's credit has been adjusted by the despatch of coin or bullion to India. A vast amount of gold and silver would therefore appear to have accumulated in India as the result of her trade. This favourable so-called balance of trade, however, became unfavourable to India in 1920-21, and the total value of her trade decreased at the same time. The balance remains unfavourable still, and is the cause of anxiety in industrial circles.

India's exports consist almost entirely of raw materials, whereas the country's imports consist essentially of manufactured goods. The effect of a diminished demand by foreign countries, due to economic worries of their own, has in some instances (*e.g.*, wolfram) caused a slump in certain Indian industries. There is practically no demand in India (for manufacturing purposes) for manganese ore, for wolfram and tin, for mica and similar mineral substances; consequently exporters of these materials are dependent on foreign markets.

With the growth of manufacturing industries in India there should be an increasing demand for domestic raw material in the country. This will be favourable to the exporters of the raw material in two ways. They will have a fresh market, and they will obtain more advantageous prices.

In his book "The Strategy of Minerals," Dr. George Otis Smith, the Director of the United States Geological Survey, says (page 298): "The coal and iron of India are destined to support a large industrial centre in the general vicinity of Calcutta, but when India's reserves are compared with those of other countries it becomes clear that even if she should ever attain a high place among the industrial nations she could not hold it long." India's resources in high grade iron ores are larger than any other known occurrences of the kind, and the distance from these deposits to the coalfields is less than 100 miles. She has an example in America.

The United States owe their predominant position in the iron and steel industry as much to her large resources of coal and iron as she does to the superbly efficient system of transportation of the iron ores from west of the Great Lakes to the coalfields of Ohio and Pennsylvania. In addition, owing to the large domestic demand for the finished iron and steel products, the output of the furnaces is conducted on an enormous scale.

India is at the door of her opportunity. Her mineral resources are attractive. Vast sums of money, idle and uninvested, the result of years of favourable trading, are believed to exist in India. The majority of her people are uneducated and amenable to the influence of the educated classes. Her difficulties are those of winning the high place among the industrial nations rather than that of keeping such a place when once secured. She will do this if she can attain to the former. She needs huge sums of money, enormous development of her industries, and, above all,

she looks to her influential citizens for reasonable and active assistance with both.

TABLE I*.

INDIAN MINERAL PRODUCTION.

Year	Coal Tons	Iron Ore Tons	Manganese Ore Tons	Wolfram Tons
1911 ..	12,715,534	366,190	670,290	1,308
1912 ..	14,706,339	580,224	633,080	1,671
1913 ..	16,208,009	370,845	815,047	1,688
1914 ..	16,464,263	441,574	682,898	2,244
1915 ..	17,103,932	390,339	450,416	2,459
1916 ..	17,254,309	411,809	645,204	3,692
1917 ..	18,212,918	413,356	590,813	4,542
1918 ..	20,722,493	492,669	517,953	4,431
1919 ..	22,628,037	563,750	537,995	3,525
1920 ..	18,321,000	558,005	736,439	2,346
1921 ..	17,000,000 ^e	600,000 ^e	539,889 ^d	670 ^e

Year	Chromite Tons	Tin Ore ^b Tons	Gold Troy ozs.	Silver Ozs.	Lead Tons
1911 ..	3,804	90	583,567	103,850	13,185
1912 ..	2,890	170	590,555	93,476	8,531
1913 ..	5,676	170	595,761	125,209	5,858
1914 ..	5,888	210	607,388	236,446	10,548
1915 ..	3,767	290	616,728	284,875	13,522
1916 ..	20,159	465	598,370	759,012	13,790
1917 ..	27,061	666	574,293	1,580,557	16,962
1918 ..	57,770	780	536,118	1,970,614	18,994
1919 ..	36,439	1,570	507,260	2,164,856	19,090
1920 ..	26,801	2,117	499,068	2,870,595	23,821
1921 ..	28,741 ^d	1,610 ^d	470,000 ^e	3,827,904	33,694

Year	Copper Ore Tons	Mica Cwts.	Salt. ^{cc} Tons	Petroleum. Gallons
1911 ..	2,238	33,896	1,225,510	225,792,094
1912 ..	9,619	43,832	1,311,015	249,083,510
1913 ..	3,810	45,422	1,299,281	277,555,225
1914 ..	4,400	40,506	1,203,762	259,342,710
1915 ..	8,010	27,139	1,393,290	287,093,576
1916 ..	4,135	43,400	1,359,164	297,189,787
1917 ..	20,108	40,908	1,304,673	282,759,523
1918 ..	3,619	54,710	1,714,621	286,585,011
1919 ..	32,756	45,784	1,891,138	305,651,816
1920 ..	28,167	46,952	1,630,123	293,116,834
1921 ..	20,000 ^e	30,944 ^d	1,800,000 ^e	280,000,000 ^e

* Chiefly from the Report of the Director, Geological Survey of India for the year ending December 31, 1920, Rec. Geol. Surv. India, Vol. LIII, Pt. 3.

b. There is also a large output of tin not included.

c. Excluding Aden. d. Exported quantity. e. Calculated (approximate).

Huge Fortune in Gold Ornaments.

One of the curiosities of the golden flood which has poured in upon the people of the United States since the beginning of the war is the addition of over \$300,000,000 worth of gold manufactures to their already large stock of personal effects of this character.

The additions made to the already existing stocks of material manufactured from the

precious metal have been, says the *Trade Record of the National City Bank of New York*, exceptionally large during and since the war. In pre-war years, says the Bank's statement we were accustomed to utilize from 25 to 30 million dollars' worth a year of "new gold" in the "manufactures and arts." The term "new gold" represents the sum actually added to the existing stock of gold manufactures and is exclusive of the large quantities of old material turned in at the assay offices and there transformed into condition in which the metal could be reutilized for similar lines of work.

Most of the gold used by the manufacturers of the country is presumably purchased direct from the assay offices and the mints, and the reports of the Director of the Mint show that these purchases prior to the war averaged about \$35,000,000 a year of "new material," and \$8,000,000 a year of "old material." In 1916, when our imports of gold jumped to practically \$500,000,000 and the earnings of the people were also greatly increased, the sales of "new gold" by the assay offices and mints jumped to \$41,000,000 and of 'old material' practically \$10,000,000; in 1919 \$56,000,000 of the "new material" and the "old material" \$20,000,000; and in 1920 the "new gold" sold exceeded \$60,000,000 in value, while the total for 1921 will approximate \$40,000,000. The additions of "new gold" since the beginning of the war have aggregated over \$300,000,000 and brought the grand total of governmental sales of "new gold" for industrial purposes since 1880 upto approximately a billion dollars. Most of this was transformed into manufactures for use of the people of the United States, as the value of exports of gold manufactures is comparatively small, seldom reaching a million dollars a year.

In other parts of the world the normal consumption of gold for industrial purposes is also large. Studies of this subject made by the United States Mint Bureau in the years immediately preceding the war indicated that the world's industrial consumption of gold had aggregated about two billion dollars in the short period of 1890-1910, of which about 20 per cent was used in the United States. In the occidental world alone the total consumed for manufacturing purposes was about 1½ billion dollars in the twenty-year period and an estimate for the Orient, chiefly India, brings the total world consumption in the twenty-year period upto fully \$2,000,000,000. While much of the gold entering India disappears and is reported as "buried," the Indian Government states officially that the uncoined gold imported into India may be considered as to be used for ornaments and manufactures, and the Statesman's Year Book of 1921 in recording the heavy gold imports of India remarks that "gold is used chiefly in the form of ornaments."

These figures, which indicate a world consumption of fully \$2,000,000,000 worth of gold for industrial purposes in the short period 1890-1910 — an average of about \$100,000,000 per annum — throw, adds the Bank's statement, an interesting sidelight upon that much discussed question of "what becomes of the gold." World's statisticians estimate the total outturn of gold in the world since the discovery of America at slightly more than \$18,000,000,000, while the annual studies of the United States Mine Bureau regarding gold monetary stocks in all the countries

of the world have never disclosed the existence of more than 8½ billion dollars as the grand total of gold monetary stock visible in all parts of the world for which records can be had. With a record of over \$18,000,000,000 of gold produced and less than \$9,000,000,000 known to exist in monetary form or as a basis for currency, it is quite apparent that the share of world gold utilized for other than monetary purposes is larger than usually supposed. The known quantities used for manufacturing in the twenty-year period, 1890-1910, were slightly more than \$2,000,000,000 while the world production in that twenty-year period was slightly less than \$6,000,000,000, suggesting that perhaps as much as one-third of the world's gold outturn is now being used for industrial purposes.

Probably three-fourths of the gold used in the United States for "manufactures and arts" is utilized for jewellery, watches, etc. Experts estimate that the quantity supplied to the dental trade averages about \$4,000,000 a year, of which, however, a considerable percentage is returned by them in the form of gold obtained from "old work", while recently published estimates of the yellow metal used in the manufacture of gold leaf puts the average at about \$1,000,000 a year. The mere remelting of old, unused, and sometimes forgotten jewellery during the war added more than \$100,000,000 of gold to the world's stock available for monetary purposes.

British Bank Rate.

It is not often that the Bank of England gives the business world a dramatic surprise and when such surprises do occur they are usually of an unpleasant character, wrote the City Editor of the *Daily Telegraph* on April 15. But the subsequent reduction in the Bank rate to 4 per cent was for once as pleasant as it was expected. We have not enjoyed such a comparatively low rate for nearly eight years, and the last occasion when it was in force takes us back to the troublous days of midsummer, 1914, on the eve of the outbreak of the Great War. In the later months of 1913 there had been a continuous shrinkage in security values, caused, as was afterwards learned, by persistent though veiled, sales from Germany, where the banks and industrial magnates were preparing for what was to come.

At Christmas 1911, the Bank rate stood at 5 per cent, but after the turn of the year the demand for money slackened, there was a partial recovery in the stock markets, and by the end of January 1914, we had got down to 3 per cent once more. On that basis we remained, in spite of the Balkan anxieties, until July 30 when the rate was raised to 4 per cent, to be followed on the two following days by further advances to 8 and 10 per cent respectively. The terrible uncertainties of that first week of August are still too fresh in the memories of the present generation to need recapitulation — in the legacy of currency notes we have an ever-present reminder. But it is not too much to say that the country owes a great debt of gratitude to the authorities for the manner in which

a financial and commercial crisis of unparalleled magnitude was surmounted, and it will always be to the credit of Mr. Lloyd George, who was then Chancellor of the Exchequer, that, not having the expert knowledge to cope with the situation, he placed himself wholly in the hands of the Committee of Bankers, and undertook to carry out what they considered best. Within a few days after arrangements had been made for the postponement of liabilities, and after the introduction of currency notes the Bank Rate was reduced to 5 per cent on August 8, 1914, and with a short interlude of 6 per cent in 1916 it remained at 5 per cent throughout the war.

It was not until towards the close of 1919 that a change in the upward direction was made, but in April 1920, the business world was startled by the imposition of a 7 per cent rate. The necessity of this high charge was not unanimously endorsed. On the one hand in view of the expansion of the currency, and the high price of commodities, learned professors declared that the proper rate should be 8 per cent — though why 8 rather than 10 or 20 per cent they did not explain. On the other hand it was pointed out that since the gold standard was in abeyance and since the huge amount of outstanding Treasury Bills provided the holders with potential currency of almost unlimited amount, the action of the Bank could not be effective, but merely penalized legitimate borrowers for trade purposes and depreciated existing securities besides enormously increasing the cost of financing the National Debt. Nevertheless, in spite of criticism, we had to put up with 7 per cent for more than a year, though it never reflected the country's real credit, and it was only at the end of April last year that a downward movement began.

BETTER CONDITIONS.

Since then by very gradual stages of never more than one-half per cent at a time we have at length got back to 4 per cent and it is to be hoped that we have now entered on a period when official money rates will be allowed to conform to the demand for accommodation, and will not be used for ulterior purposes, such as the contraction of the currency and the pursuit of the chimerical idea that a return to the gold standard can thereby be hastened. Though there has been some surprise that the reduction did not come sooner, inasmuch as the Government has been able to borrow on Treasury Bills for some time at less than 3 per cent — Thursday's rate by tender was only 2½ per cent, — now that it has been taken the step will not be less welcome.

That it will stimulate trade to any great extent is not to be expected. It is rather the sentimental effect which will be important, for just as a high Bank Rate is a danger signal that all is not with the body economic so a reduction to a figure not touched for eight years will strengthen the impression that all is clear once more. It will, however, help to restore confidence in the business world, and may turn the scale in cases where hesitation is felt as to the wisdom of embarking on new enterprises. Again, with the allowance for deposits in the banks lowered to 2 per cent, following the fall in the Bank Rate, there will be less disposition to leave money on deposit so that the Government can reasonably anticipate a better response to invitation to new loans owing to the larger supply of fundseeking remunerative employment. In short the drop to 4 per cent in the Bank Rate has brought us appreciably nearer the stage when a funding operation on reasonable terms will be feasible. The saving already being effected in the cost of financing

the floating debt will be accentuated, and that in turn should assist the Chancellor in alleviating the burden of income-tax.

Reh Salts.

In the February number of the *Journal of Indian Industries and Labour*, Messrs. E. T. Watson and K. C. Mukerjee of the Technological Institute at Cawnpore discussed the nature and extent of the deposits of Reh salts in the United Provinces, and estimated that a very large quantity of carbonate of Soda existed in the soil covering a large portion of that Province. In the current number of the journal the same authors deal with the problem of utilizing these Reh salts in an article in which they give the results of various experiments conducted by them with the object of ascertaining the best methods of preparing pure soda ash, caustic soda, sodium sulphide and other products from the indigenous material. The results of these researches and the account of the methods by which they were obtained will be of much interest to industrial chemists.

Up-to-date Tanning Processes.

The *Journal* contains a detailed account from the pen of Mr. B. M. Das, Superintendent of the Calcutta Research Tannery, on up-to-date tanning processes under Indian conditions. The value of the work done by Mr. Das in the interests of the tanning trade is well known, and in the present article the whole subject is treated in a most complete and practical manner. Mr. D. Penman, Principal of the School of Mines and Geology which is about to come into existence at Dhanbad in Bihar and Orissa, contributes an article on Mining and Geological Education in India. After touching on the need for technical education to keep pace with the industrial advancement of a country, he shows how important a part is played by technical education in the case of mining. The article gives a brief history of previous attempts to enlarge and raise the standard of mining education in India, with particular reference to the coalfields of Bengal and Bihar and Orissa, and explains the need for adequate facilities for mining and geological education. The demand for trained mining engineers and geologists with a knowledge of mining cannot be adequately or satisfactorily supplied from outside the country, and the importance of the projected School of Mining and Geology can hardly be overestimated. Mr. E. E. A. Cove, Inspector of Industrial Schools in the Central Provinces, makes an appeal for the adoption of industrial careers involving an acquisition of practical knowledge by the upper and middle classes in India. The country needs more producers, and her industries demand that the best brains in the country should be brought to bear on them. Mr. Cove argues, with reason, that Indian capital will be shy of Indian industrial ventures until it is assured that such ventures are in the hands of practical men whose ability and status will inspire confidence.



Topics from Departmental Reports.



Empire Cotton Growing Corporation.

At the first General Meeting of this Corporation held in London on February 8th, the Report of the Administrative Council was admitted. The following extracts from the Report, describing the prospects of cotton growing in different parts of the Empire including India, the Sudan, Tanganyika, etc., will be read with interest:—

INDIA.

The Council have seen with pleasure that the Central Cotton Committee, recommended by the Indian Cotton Committee, in its report of 1919, which has been formed in Bombay, has held its first meeting. The Indian Committee extended an invitation to the Lancashire Cotton Industry to nominate a representative at its inaugural meeting. The Empire Cotton Growing Committee arranged that Mr. H. P. Ray, of the Bombay Company, should so act.

It is of interest to note that the Indian Cotton Committee at its meeting recommended:—

(a) Legislation to control the transport in certain areas of loose cotton and seed cotton in order to lessen the chances of mixing the varieties, and

(b) The compulsory imposition of a small cess on all cotton used in the country or exported, the receipts from which should be devoted by the Council to the development of the production of cotton.

These two proposals amongst others, are, it is understood, under the consideration of the Government of India. It seems probable that the proposal to make the cotton cess compulsory will go up to the Government of India with strong support from the Provinces. Its passage into law would therefore appear to be extremely probable.

BRITISH WEST INDIES.

Considerable difficulty was experienced, early last year, in disposing of the West Indian crop of Sea Island Cotton. Prices fell considerably, and owing to the lack of demand it seems probable that at the end of the present picking a large portion will have to remain on the growers' hands. To provide ready money in order to enable cultivation to be carried on for next year, the Imperial Commissioner for Agriculture for the West Indies submitted to the Empire Cotton Growing Committee a request that an advance should be made to the Governments of the West Indian Islands, in order to relieve necessitous growers. The Committee considered that the matter was urgent, and authorized advances up to 1s. 3d. per lb. on first quality, not exceeding a maximum of £30,000. The rate of interest fixed was 7 per cent, and the security for the loan is the cotton stored in the growers' own stores. No advances are to be made until the cotton has been ginned and baled, and until the Agricultural Department concerned has reported that it is satisfactorily stored and insured. Owners must undertake not to export cotton on which advances have been made until such advances have been repaid, except

to the British Cotton Growing Association, after notifying the Colonial Government. A considerable rise in the prices of cotton, however, was experienced after these decisions were come to, and, in addition, this year's crop was considerably reduced by damage caused by violent storms and tornadoes. It is possible, therefore, that the surplus remaining unsold may be reduced sufficiently to enable cotton growers to dispense with the aid offered them.

TANGANYIKA TERRITORY.

The prospect of the successful growing of cotton appears to be very considerable. The following steps have been taken. The Governor feared that private individuals would not be able to buy this year's crop, and that if this year's crop were not purchased from the natives they would be discouraged from planting any cotton next season. He therefore asked the Colonial Office to obtain permission from the Treasury for part of his grant-in-aid to be advanced for the purchase of the cotton, provided that the Empire Cotton Growing Corporation would take over responsibility for repayment on 15th December, 1921. It was estimated that the total sum required would not exceed £100,000. This the Empire Cotton Growing Committee promised to recommend to the consideration of the Corporation, if the Treasury would agree to Government purchase up to that date. The Treasury decided that they could not give the Governor permission to employ his grant-in-aid in this manner unless the Empire Cotton Growing Corporation agreed to accept this responsibility, and repayment was thus assured. In anticipation of this support by the Corporation this decision was cabled to the Governor, and the mind of the native grower set at rest. At present private individuals are purchasing, and no action by the Corporation has been necessary. The total crop has been estimated at approximately 7,500 bales.

In December last an interesting report on the possibilities of the Territory was received from Major Hastings Horne—an officer of the Colonial Civil Service whom the Secretary for the Colonies, at the request and at the expense of the Empire Cotton Growing Committee, was good enough to second from their service to make a tour in the Territory for that purpose. After carefully reading that report, and considering a note on the situation prepared by the Director, the Chairman's Committee unanimously decided to apply to the Government of India for the loan of one of their officers, of considerable distinction both as an expert in cotton growing and in general administration, to work in Tanganyika Territory for a period of two years, and attempt to ensure that the nascent industry advanced on proper lines and that initial mistakes were avoided. It may be well to add that this step was taken with the warm approval of the Colonial Office. In this case also the need for securing the presence of the officer in Tanganyika before the sowing season of next year was the principal reason that induced the Chairman's Committee to authorize immediate action,

and they feel sure that their policy will be confirmed by their successors.

NIGERIA.

An interesting report on Nigeria has been received from a distinguished servant of the Colonial Office, Sir Hector Duff. This report is not only of interest on account of its orderly presentment of the opportunities for developing cotton in Nigeria, and of the difficulties which present themselves there, but it is also of great value in its discussion of the general principles to be followed in all efforts to encourage cotton growing by natives in the Empire. The Council feel confident that the various points of importance raised by Sir Hector will in due course be taken up with the Governor of Nigeria and with the Colonial Office. [An article on Sir Hector Duff's Report was published in the *Board of Trade Journal* of 1st December, 1921.]

NYASALAND.

The Empire Cotton Growing Committee received a request from the Governor of Nyasaland that an expert should be sent to the Protectorate to assist their Agricultural Department in their cotton work during last season. Advice was sought on the cause of the decrease in quality of the cotton, the low yields, and other matters. The Committee were fortunate in being able to obtain from the Indian Government the services of Mr. H. C. Sampson, at present Director of Agriculture in Madras. Mr. Sampson was only able to make a short tour in Nyasaland, owing to the fact that his services were urgently required again by the Indian Government. The report which has been recently received from him is of extreme interest, and, as would be expected from an officer of Mr. Sampson's specialized experience, the subject is treated from a technical standpoint. Here, again, in addition to matters of general administrative importance, interesting questions are raised as to the necessary qualifications and experience of an agricultural staff in the tropics. Mr. Sampson's observations seem to confirm fully the conclusions at which the Empire Cotton Growing Committee have already arrived, and as regards which they hope it may be possible to take effective action. It is abundantly clear that one of the main objectives of the Corporation must be the provision of a highly trained staff, both for scientific research and for the work of agricultural administration. An advance has already been made in that direction by the provision of several student-ships, but the subject is a wide one, and will raise important issues.

THE SUDAN.

The past year has been an eventful one in the history of the irrigation development of this country, to which the Council attach very great importance. In May last it was reported that, on account of the great increase of working expenses, the loan subscribed under Treasury guarantee of interest, for the purpose of constructing a dam across the Blue Nile and of irrigating a considerable amount of land in the Gezira—in terms of an agreement entered into between the Sudan Government and the Sudan Plantations Syndicate—would prove inadequate for the completion of the work. The matter was considered by a Committee representative of the Government Departments concerned, and as a result work will be continued for the present. The Sudan Government have meanwhile secured the services of an independent expert of the highest possible standing, to report on the present position of the works on the

Blue Nile. The provision of further funds will have to be considered in June or July next.

The whole question is an extremely difficult one and it is inextricably connected with the Egyptian political situation. With that question your Council have no desire to interfere, but they desire to put on record that, from the point of view of the cotton industry, the development of the Sudan is of first rate importance, and that, as each year goes by, the wisdom of the conclusions arrived at by the Empire Cotton Growing Committee become the more fully confirmed. They are firmly persuaded that the British Government cannot avoid the responsibility of defining the political status of the Sudan, if only for the reason that without such definition the development of the country can only be accomplished at the direct cost of the British taxpayer. This development, especially in the direction of the provision of adequate irrigation and transport, is urgently required in view of the Act that, in its absence, the country, with its increased population, would be exposed, as the result of a few rainless years, to imminent risk of famine. The Council desire to bequeath this Sudan question as a legacy to their successors, and venture to express the hope that they will unceasingly urge on the Foreign Office the gravity and urgency of the situation. From the point of view of practical cotton growing the situation is one of special and immediate promise, and your Council further feel that the population of the Sudan have, by their loyalty and devotion throughout critical years of war, earned all the support in the development of their own country that the British Government can render them.

Compulsory Education in the U. P.

Reviewing the replies of Municipal Boards to G. O. No. 98-XI—8, dated the 19th January, 1921, and G. O. No. 572, dated the 2nd April, 1921, the United Provinces Government offers the following observations:—

In G.O. No. 98-XI—8, dated the 19th January, 1921, the Local Government asked all municipal boards to report—

(1) Whether they proposed to take any steps to introduce compulsory education.

(2) To what extent they proposed to introduce it.

(3) What financial assistance they required from Government for the purpose.

Subsequently in G. O. No. 572, dated the 2nd April, 1921, the boards were asked to supply more detailed information.

2. From the replies received from the boards it appears that 32 are willing to introduce compulsory education for boys. Their proposals have been framed on varying principles and in many cases no clear estimate of cost has been worked out. They have therefore been revised by the Educational Department on uniform principles, as follows:—

(1) Eighty per cent of the number of boys between the ages of 6 and 11 (according to the Census returns for 1921) has been taken as the number of pupils for whom provision should be made; it has been assumed that the remaining 20 per cent will be exempted or will be enrolled in English schools.

(2) Provision has been made for enrolling, in 1922-23, 75 per cent of the boys to be brought under compulsion; in 1923-24, 90 per cent; and in 1924-25, 100 per cent.

(3) Teachers have been provided at the rate of one for every 30 boys to be brought under compulsion, and primary schools at the rate of one school for every 180 boys. The pay of new teachers has been calculated at the revised rates sanctioned for teachers in district board schools, with a minimum of Rs. 14 per mensem for untrained teachers.

(4) Provision has been made for training classes sufficient to train teachers to replace casualties amongst the existing staff and to ensure that 50 per cent of the additional staff required for expansion will be trained.

(5) Provision has been made for recurring expenditure on contingencies at the following standard rates:—

(a) Rupees 100 per annum per full primary school of 180 boys has been provided for servants.

(b) Rupees 30 per mensem per full primary school of 180 boys has been provided for rent, pending the construction of buildings; when buildings are provided this sum will be utilized for repairs to buildings.

(c) Rupees 20 per annum per additional teacher added to the staff has been provided for miscellaneous contingencies in primary schools, including stationery and prizes.

(d) Rupees 200 per annum per training class has been provided for miscellaneous contingencies in these institutions.

(6) Provision has been made for the pay of the attendance officer and his contingent expenses at the following rates:—

(a) For municipalities with 20 schools or less — Rs. 50 per mensem for pay and Rs. 240 per annum for contingencies.

(b) For municipalities with 21 to 50 schools — Rs. 75 per mensem for pay and Rs. 300 per annum for contingencies.

(c) For municipalities with over 50 schools — Rs. 100 per mensem for pay and Rs. 420 per annum for contingencies.

(7) Provision for non-recurring charges has been made as follows:—

(a) Rupees 3 for additional pupil for initial equipment (matting, maps, charts, blackboards, etc.) in primary schools, and Rs. 200 per training class for initial equipment in training classes.

(b) For buildings Rs. 7,000 per primary school (excluding cost of land).

3. The Local Government are prepared, provided that sufficient funds are available and are granted by the Legislative Council, to give boards, which agree to apply the United Provinces Primary Education Act to the whole or to any part of the municipality, assistance to the extent of (1) two-thirds of the extra cost involved, including the cost of remitting fees, and also (2) the total cost of bringing the minimum pay of their teachers employed in vernacular boys' schools up to the minimum rates prescribed for district boards; provided that the total contribution made by Government to the municipality on account of primary education shall not exceed 60 per cent of the total cost of the same.

4. The Chief Inspector of Vernacular Education will be glad to assist boards to work out final proposals. He will arrange, if so requested by a board, to meet the executive officer or secretary (and any member or members of the board, appointed by the board for the purpose) and will work out with them the details of a scheme for consideration by the board. This scheme may be either accepted by the board or modified by it.

5. When the board has a scheme ready it should, if it is prepared to introduce compulsory education on the financial terms stated in paragraph 3 above, pass a special resolution as required by section 4 of the United Provinces Primary Education Act, and address (through the District Officer, the Commissioner, and the Director of Public Instruction) to the Secretary to Government in the Educational department an application in the form prescribed by rule 5 of the rules made under section 18 of the Act and published with Government notification No. 1853-XI—45, dated the 19th November, 1920.

6. In conclusion, the Local Government would impress on the boards that the question before them is, in plain terms, whether they are to continue to allow the children for whose education they are responsible to grow up in ignorance and helplessness. This question is no longer an academic one. It is narrowed down to the practical issue whether the boards are willing to bear a definite fair share of the cost. On the decision, which now rests with the boards, largely depends the moral and economic progress of the town population of the province.

The German Budget.

The German Government has published a revised statement of the Budget for 1922, as it appears, according to the latest figures. This reveals that the position has already become worse than previous statements revealed.

There is a surplus in the ordinary Budget of 16,500,000,000, and a deficit in the extraordinary Budget of 3,110,000,000 marks. In the Railway Budget there is a deficit of 19,442,000,000, and in the reparations Budget a deficit of 176,032,000,000 marks. The total deficit is 198,584,000,000 marks. Even were reparations left wholly out of account, there would still be a deficit of 6,052,000,000.

The financial position, in fact, is growing steadily worse, and is only made a little less glaring by the system of accounts adopted. In his statement on the Reichsbank accounts for 1921, Herr Havenstein, the President of the Reichsbank, stated that the note issue during the year had been increased by 45,000,000,000 marks to 114,000,000,000 marks. At

the same time he gave various reasons of an ordinary character for the bad position of the German exchange, but a careful examination of the speech fails to show that he connected it with the vast increase of the note issue.

The new Reichsbank law is designed to strengthen the bank authorities in resisting demands by the Government for the wanton issue of further paper currency. It is not likely to be of much practicable value unless the debt authorities accustom themselves to face the question of inflation and its effects on the exchange.

The normal rate of exchange is 2,043 gold marks to the pound sterling. The exchange value of the paper mark is now about 1,300.

The production of fertilizers and artificial manures in Czecho-Slovakia is progressing. Last year's output showed a considerable increase over that of the preceding year.



Mainly About Persons.



Mr. Montagu.

The following account of the ex-Secretary of State for India was contributed in a home paper in mail week by "One who knows him."

Mr. Edwin Samuel Montagu, whose exposure of Mr. Lloyd George's methods is the political sensation of the hour, comes from that very orthodox Jewish family which controls the prosperous bullion broking firm of Samuel Montagu & Co., in Old Broad-Street, E. C., whose main business is the buying and selling of silver. His father, the first Lord Swaythling, son of Louis Samuel, a Liverpool watchmaker — the surname Montagu was assumed by royal licence — familiar in the City by reason of his patriarchal white beard, left the comfortable fortune of a million and a half to his children on condition that they remained Jews and married persons professing the same faith. The Hon'ble Venetia Stanley, the youngest daughter of Lord Sheffield, the educationalist and close friend of Mr. Asquith, before marrying Mr. Montagu became a convert to Judaism.

It was probably his friendship with Mr. Asquith that introduced Mr. Montagu to his wife; it was certainly his friendship with Mr. Asquith that gave him his first chance in politics. Educated at the City of London School (as was Mr. Asquith) and at Trinity College, Cambridge, where he was president of the Union Society, he entered Parliament in 1906 as Liberal representative for the Chesterton division of Cambridgeshire.

Mr. Asquith struck by his cleverness made him his private secretary and successively advanced him as Under-Secretary for India, Financial Secretary to the Treasury, Chancellor of the Duchy, and Minister of Munitions.

When Mr. Asquith fell, his clever young friend also lost his job, but Mr. Lloyd George with the tempting bait of the India Office drew him from the Asquithian camp into his own fold, and only the influence of Mrs. Montagu some time later made it up between the old man and his errant protege.

Mr. Montagu, who is only 43 years of age, has not yet shed either the asperities of youth or the supercilious manner which accounts to some extent for his unpopularity among the Tories (in his day, equally hostile to young Disraeli.)

Tall, loosely built, and addicted to a monocle, he has the gift of getting on, but not the gift of "mixing."

In the Dyer debate he was bitterly attacked by the Die-Hards, whom on Saturday he so mercilessly castigated, showed by his Indian Reform proposals.

Politically an ardent Radical, as he will find his way back to the Wee Frees and there wait his chance. He is too young and too clever to have ended his career by the rupture with Mr. Lloyd George, who may live still further to regret retiring him.

Inheriting the financial acumen of his race, Mr. Montagu is credited with the invention of the War Savings Certificate.

Dean Inge.

Dean Inge, of St. Paul's, has become a regular contributor to daily journalism, and Londoners are discovering that he is not so gloomy as he was painted. The other day he greatly added to the gaiety of smoke-rooms by publishing, with naive ecclesiastical approval, a selection of Limericks, all of the most entirely unobjectionable nature, of course, but each one an obviously painful Bowdlerism of something quite different and far less canonical. And the other day, bless his heart, he actually told in cold and dignified print a story *a propos* of brides and bridegrooms which the "Pink 'Un" might have just ventured to risk and no more in its palmy days. But on general subjects the gloomy Dean displays a delightful scholarship and writes with splendid nerve. In most things he may be rather a Die-Hard, but in others he is as optimistic as the best. For example, he ranks as far more substantial human progress than all our much-talked of modern scientific development, the freeing of humanity from the tyranny of debasing superstitions. Within living memory there have been executions for witchcraft in Mexico and Peru, but Europe has cast off that horror. How many readers know that seven thousand witches were burned at Treves, nine hundred in one year at Wurtzberg, and four hundred at once at Toulouse? Or that conviction for witchcraft was recorded in England in 1712, and the last execution in Scotland based on the same gross superstition actually took place only in 1722? Dean Inge recalls how, when in charge of a fashionable West End parish, he found his well-educated parishioners shared the superstition as old as Ovid against a May marriage.

Job Wood.

Job Wood, Jr., Deputy State Superintendent of California, made a great address at Chicago. Although expenditures for public schools have gone from \$416,000,000 in 1911 to \$1,000,000,000 in 1921, the purchasing power of the dollar in 1921 was less than half that of 1911, and the \$10 per capita expenditure for education in 1921 could purchase no more than the \$4.46 per capita in 1911.

It has reason to expect no more, but as a matter of fact it is getting more, the increase being chargeable to the devotion of the great body of teachers and school administrators to the cause of better America.

What kind of school system shall we have in 1931? It depends entirely upon the attitude of the American people toward facts that are well known. I do not doubt the American people, when they know the facts, will gladly build and support a school system to match the nation's need.

The school system of America must be based upon the principle of equality of opportunity. In planning to realize equality of opportunity it is necessary to recognize natural inequalities.

The school system of 1931 will frankly avail itself of intelligence tests to determine that point in the scale of intelligence below which native endowment

is so slight that effort to develop it is wasted, or largely wasted. The school system of 1931 should be expected to care only for individuals who possess sufficient native endowment to justify education.

Sir W. Pearce.

Sir William Pearce, M. P., Parliamentary Secretary of the Association of British Chambers of Commerce and a member of the Advisory Committee to the Board of Trade, explained to the members of the British Women's Patriotic League the present economic position of the country and the need for moderate costs of production in the coal, iron, and steel industries.

Sir William said he took a really serious view of affairs. He did not believe one person in twenty knew how critical the position was. All economists he knew were agreed that for the Government to be taking in taxation 35 per cent of the people's earnings and 50 per cent in the case of rich people meant that the danger limit had been reached. Yet whatever form of government we had, he did not think expenditure could be reduced below 900 millions a year. The country must carry the load, and it would be a great tribute to its powers of organization if it pulled through. His text was that only out of success in the coal, iron, and steel industries could these burdens be supported.

Turning to trade, Sir William said we must do a large and increasing foreign trade if all the people were not to starve or emigrate. Out of the seven days' food consumption, four and a half days' food came from abroad. Eighty loaves out of every hundred were made of imported flour. Cheap coal and iron were fundamentally necessary if we were to recover foreign trade. Miners were taking quite

low wages. He thought other trades should come to their help. He was able to report, however, that there was an increasing trade in export coal. He had heard it stated that there was not a single cargo being carried at a profit by the shipping companies. But here he thought business was improving.

If we could get the industries of coal, iron and steel out of the depths he thought the country would also be brought out of the depths. But it was no use looking to the Government, or to such theories as nationalization. If the country were to be saved it could only be by the individual exertions of each man and woman.

Mr. Lloyd George.

An illustrated pamphlet of 24 pages entitled "The Democrat in Downing-street" is being distributed to residents in various parts of London, the method employed being to drop the booklet in the letter-boxes of the houses. The pamphlet opens with the statement that "the life story of David Lloyd George, the wonderful career that brought him from a lowly home in a Welsh village to Downing-street, is a drama of democracy." A series of paragraphs, each with a sub-head, tell the various phases of Mr. Lloyd George's career from his early days in the home of his uncle, "a pious and studious village cobbler of Llystumdwy," to the signing of the Irish Treaty. At the end of the pamphlet appears the telegram sent by the King to the Prime Minister on receipt of the news of the Irish Settlement. The cover gives a picture of No. 10, Downing-Street, and other illustrations include Mr. Lloyd George's birthplace at Manchester, portraits of himself, Mrs. Lloyd George and their sons and daughters, and several caricatures. The pamphlet is printed and published by Thomas De La Rue & Co., Limited, 110, Bunhill-Row, E.C.1.

East African Coffee.

The discovery that Australia has been buying East African coffee on the London market and reshipping it to the Antipodes has led Kenya growers to send samples of their produce to New Zealand and Australia through British Trade Commissioners in those parts of the Empire, while American purchasers and the prospect of Continental markets reopening as consumers have served to stimulate a more optimistic outlook among planters. It is worthy of note that there is a tendency to canvass the desirability of adopting the term "Kenya coffee" in place of the now current "Nairobi coffee," which, it is felt, scarcely applies to all coffee grown in the colony.

Considerable discussion is rife as to the steps that should be taken in the direction of better marketing facilities. One well-known merchant in Nairobi has declared that he has been unable to fill substantial orders received from English clients on account of the lack of organized co-operation among planters, and he affirms that the colony has lost markets worth thousands of pounds per annum.

The only solution advocated is the establishment on the spot of a proper coffee exchange, with auction sales at intervals of about three weeks, samples being on view for at least a fortnight before the sale, and catalogues being printed and circulated from the date of the placing on view of the samples. This would enable merchants to communicate with their

clients and receive their replies by cable. In other words, the scheme would be worked on the broad lines of the Mincing-lane market. Grading would depend on the certificate of the Government Department responsible therefor.

Were such a plan to be adopted, with the consequent publication in the right quarters throughout the world of the results of each sale, the oversea buyer would certainly acquire new interest and added confidence, while the planter would have a much better chance of prompt payment for his crop. At the present moment the grower is an individual dealing with brokers in London; it is held that the industry can never be on a sound and progressive basis until the planter contents himself with producing the berry, leaving its sale to qualified merchants who devote their whole time to the task.

State motor transport has developed very considerably in Czecho-Slovakia within the last two years. The Ministry of Posts and Telegraphs has received 300 applications for the establishment of State motor routes in all parts of the Republic. When the orders placed in 1921 have been delivered, the Ministry will have 112 motor omnibuses, 21 motor lorries, and 20 motor transport vehicles.



Leaders in Finance and Industries.



CHARACTER SKETCH OF THE MONTH.

Sir Alexander McRobert.

Sir Alexander McRobert, who died suddenly on June 22, was a notable figure in the Indian industrial world. The following appreciation from the pen of an old friend will be read with interest:—

Sir Alexander McRobert's death has removed from India a very remarkable man. Widely known as an energetic, eminently successful man of business, he was at heart a student to whom the acquisition of knowledge was an abiding passion.

The son of an Aberdeenshire farmer, he received the sound education Aberdeen gives to her sons, and at an early age began to earn his living in the office of an Aberdeen manufacturer. To McRobert, however, the end of his school days was the beginning of real study, and for years he devoted his nights to evening classes and his holidays to passing examinations at South Kensington and elsewhere. Botany, History, Chemistry, Zoology, the Theory of Music, were all one to this prodigious worker. Once, so he told me, he had seventeen subjects in hand at one time, and passed in them all. Thoughts of matrimony made him seek to increase his income, and as the successful candidate in reply to an advertisement he went to India about the year 1884, as the general manager of the Cawnpore Woollen Mills. Hardly had he settled to his work when the Pendjeh incident raised the fear of imminent war with Russia, and the Indian Government, short of supplies, turned to the Woollen Mills, as they did again in 1914. The Company rose to the occasion. The Mills worked night and day. McRobert put in about eighteen hours' work out of the twenty-four. In the midst of the struggle the foreman dyer struck for more money, but to his astonishment was promptly fired out of the place. McRobert was a sound chemist and the few months in the mill had shown him all he required to know on the practical side. From that period the Woollen Mills have never looked back, and under McRobert's wise and far-seeing management are to-day one of the largest concerns of their kind in the world.

Authorities outside the commercial world came to appreciate McRobert's wide range of knowledge and great ability. He was of the governing bodies of Allahabad University and the Roorkee College; Aberdeen University honoured him; Lieutenant-Governors and even Viceroys were glad to take counsel with him. The late Amir of Afghanistan was not satisfied until McRobert, whom he had met in India, became his honoured guest at Kabul.

It is, however, to "old Mac" that the thoughts of his friends are turning to-day. The irascible old despot who blew a man skyhigh if a bit of wool was out of place and then tortured himself with the thought he might have been unjust; the stern disciplinarian demanding a high standard of efficiency which he did not spare himself and others to attain — but, oh! so thoughtful of women and children and the sick; the pioneer in India of model dwellings; the cunning deviser of provident and other funds and schemes

designed to make his men save and better their condition. No man worth his salt was ever the worse for service under McRobert. Faults were corrected, his weakness purged, the best in him encouraged. His men might at times swear at him among themselves, but outsiders had scant sympathy if they ventured to condemn the one and only "boss."

It is literally true to say that his word was better than his bond. Shylock and he had, I am afraid, something in common as regards legal instruments, but his word was a sacred thing, full measure and running over. He could make plans years ahead and keep a secret against any man, but the petty deceptions by which weaker men sometimes achieve their ends he did not understand. "You call it diplomacy. I call it deception," was the characteristic comment upon the innocent recital of a friend who by a slight economy of the truth and rearrangement of his facts had settled a matter to his liking.

The work of his bearer was almost sinecure, his personal expenditure trifling, but his private charities and little acts of kindly help were innumerable; and the Kalimpong Homes, the Cawnpore Hospital and his native city can testify to his public benefactions.

To his friends he was the most generous and thoughtful of men, but he hated waste in any shape or form, whether of brain or body or pocket, and practised what he held to be right without regard to what the world might think.

He was a "bonny fighter," and did not suffer fools gladly. People handled roughly might misjudge him, but those privileged to understand the true McRobert, the old friends to whom he was so true and loyal, knew that underlying that strong character and powerful intellect there was a modest loving, reverent spirit. He loved the ancient Faith, and I call to mind to-day how the last time I saw him a chance question in conversation as to where to find the "Sermon on the Mount" brought from him without a moment's hesitation the Gospel and the number of the chapter.

The *Near East* to which we owe the above has also the following:—The sudden death of Sir Alexander McRobert leaves a gap not easily to be filled in the industrial community of northern India. Sir Alexander stood for the combination of scientific knowledge with practical business ability. He was a lecturer in Chemistry in this country before he went to Cawnpore; there his first work was to place the woollen industry on a firm and remunerative basis, while more recently he was actively associated with the formation of the British India Corporation, a combination of textile, leather, and engineering factories, which probably marks a new epoch in the industrial history of the country. But he was much more than a successful manufacturer. His handling of the housing question in overcrowded Cawnpore, together with his munificent gifts to the community, marked him out as an enlightened and far-seeing social benefactor; his wide experience and practical sagacity made him a counsellor of the utmost value, both to the Government and to every one concerned in the economic development of the country.



Books in Brief.

SHORT REVIEWS OF RECENT BOOKS.



The Wages of Labour.

By William Graham, M.P., M.A. (Hons.), LL.B., published by Messrs. Cassell & Co., Ltd., London and New York, 5s. net.

This is a topical book in Mr. Graham's well-known style. He is straight as a die and is not afraid to state his views plainly. His immediate object in this work is to summarize some of the recent issues affecting wages, especially in the light of post-war economic conditions, and to suggest a wages programme for employers and employed. The wages policy, he recommends is outlined by him in the concluding chapter of his book. It is well worth perusal. The chapter (IV) deserves study, for it is a criticism of the wages system. Marxians receive some attention in it. In other chapters the minimum wage and the standard wage are considered while scientific management has two chapters allotted to it. It is altogether a brilliantly written book; in fact, the best we have so far read on the ticklish question of wages during the post-war period.

The Financial Review of 1921.

By J. S. M. Ward, B.A., F.C.S.F.R. Econ. S., and A.L. Pease, B.A., F.S.S., published by the Intelligence Department of the Federation of British Industries, 39, St. James' Street, London, S.W. 1.

This is a notable Summary of the financial year 1921. Like its predecessor for 1921 it is a thoroughly exhaustive and critical one. In regard to Indian exchange movement, the writers state that the fluctuations were due to the variations in the relative value of gold and silver. The movement of prices during 1921 is dealt with in a graphic manner. Altogether an excellent review worthy of careful study.

Graded Outlines in Hygiene.

By W. F. Cobb, M.D., B.P.E., Director of the Department of Physical Education, Baltimore, Maryland, published by the World Book Co., Yonkers-on-Hudson, New York.

The World Book Co., which issues this book, is known as "the house of applied knowledge." Its objects are thus set down in the book and we cannot do better than quote it. "In the belief that oral instruction in the laws of hygiene can be given with profit to children too young to read and study a text-book in the subject, this book has been written and published." We carefully examined and can unhesitatingly recommend it as an excellent one for the purpose it has in view. To use the language of the author it stimulates "doses of health instruction that the teacher can successfully administer." We should be glad to see the book attract wide attention in India.

Mercantile Directory of Mysore, 1922.

Published by the Mysore Chamber of Commerce, Bangalore Press, Bangalore City, Price Re. 1.

This is a neatly got-up Directory full of useful and up-to-date information relating to the Mysore State. It is of a comprehensive character and ought to prove highly useful to traders and merchants in the State.

Acknowledgment.

1. Baroda Administration Report for 1920-21.
2. Report of Public Instruction in Mysore for 1920-21.
3. Report of Public Instruction in Madras Presidency for 1920-21.
4. Proceedings of the Board of Agriculture in India.
5. Report of the Income-tax Regulation for 1920-21.
6. Report of the Jails in the U. P. for 1921.

Topics from the Journals.

Bulletin of the Imperial Institute, London, Vol. XIX, No. 4, 1921.—The World Trade in-Sugar, with special reference to the Empire.

The Journal of the University of Agriculture, June 1922.—Science and the Farmer, by Professor A. Thompson, M.A., LL.D. The School of Agriculture of the University of Cambridge, by Professor T. B. Wood, C.B.E., M.A., etc.

Journal of the Royal Society of Arts, April 1922.—The Indigo Situation in India, by Prof. Armstrong, Ph.D., LL.D., etc.

Industrial India, May 1922.—Brick and Pottery making.

The Social Service Quarterly, April 1922.—Co-operation for Factory Workers, by L. S. Potnis, B.A.

The Agricultural Bulletin of the Federated Malay States, Vol. IX, July, August and September, 1921.—Notes on the South American Leaf Disease of Rubber.

The Bombay Co-operative Quarterly, June 1922.—Constitution of Co-operative Conferences, by D. A. Shah, M.A., LL.B.

The Educational Review, May 1922.—The University of Nalanda, by A. Rama Iyer, M.A.

The Agricultural Journal of Mysore, Vol. IV, 1922.—The Manufacture of Ensilage by W. Davison, B.S.A.

The Journal of Industries and Labour, May 1922.—Modern Training Process in India, by B. M. Das, M.A. (Cal.) Vegetable Dye-stuffs, by S. R. Khosla.

The shoe-making industry in Argentina has so developed that practically only the better classes of shoes are imported. United States manufacturers hold the bulk of the trade in women's high grade shoes, but are admittedly inferior to British makers of men's footwear. Suppliers should keep their Argentine customers regularly informed as to conditions in the British and the world markets.

The Mysore Economic Journal

A Monthly Periodical devoted to the Discussion
of all Economic Topics of Interest

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The Economic Situation in Europe—A Review.

By Albert J. Saunders, M.A., F.R.Econ.S.,

American College, Madura.

The Americans are very forward in all kinds of research work, and this post-war period has given them all manner of difficult problems upon which to work. A recently founded institution with its bureau in New York City is the Institute of International Education. This Institute has been doing excellent work in promoting understanding and goodwill among the nations through the medium of international education. For instance, last year in the University of Chicago a well-known educationist from India — Patna University — delivered a course of lectures on the Reform Scheme in India which continued for two weeks, and he went all over the country giving the same course of lectures. Another method is to prepare and send out splendidly written booklets on various phases of economic reconstruction. They are excellent little studies, and written by scholars who are experts in their subject. I have one of those studies before me now, and shall review it briefly for the general interest of the *Economic Journal* readers. It is called the Economic Situation in Europe.

In the Preface the author says: "The treaties which followed the Armistice have been completely unsatisfactory from the economic point of view. European economic life is still disorganized to a remarkable degree. The chief factors in that disorganization seem to be: First, the destruction and devastation of the war period which still makes it impossible for certain countries to function now as they did before the war (this is especially true of districts in the north-east France, in Poland, in Austria, in Serbia, and in Russia); second, the fact that no one of the continental European countries is able at the present

time to equalize Government revenue and expenditure; third, the difficulties involved in the reparation settlement; and fourth, the trade barriers which have been raised along the new national boundaries created by the treaties of peace.

These four fundamental difficulties have given rise to an excess of imports over exports in every European country, to inflation of currencies throughout Europe with a resultant increase in prices, to complete disorganization of foreign exchange relationships, and finally to industrial depression and unemployment in most of the important European countries in 1920 and 1921.".....

"The foreign trade situation in Europe at the present time is not only complicated by the difficulties resulting from the depreciated currencies, but also suffers from the trade barriers which have been raised along the new national boundaries.".....

"The immediate need of Europe is for long term credits for reconstruction purposes, a satisfactory settlement of the reparation problem, economic co-operation without regard to national boundary lines, a settlement of government finances upon a sound basis, and a reorganization of national currencies. This latter process will, in most of the European countries, involve a revaluation of currencies.

"The relative urgency of these various economic problems varies from country to country, and because it is impossible in the scope of a brief study of this sort to survey in detail the whole field of European economic life, more comprehensive statements have been limited to England, France, Germany, and Austria."

The author then deals with the economic conditions of each of the countries named above. Of England he says: "It has become a truism that 'England lives by trade'. More than any other nation in the world, her prosperity depends upon that of others, because she has developed a peculiar type of national economy; she is distinctly the manufacturer and the trader as distinguished from the producer of food and raw materials. Lord Balfour puts the matter very clearly in these words: "We have got to deal with unemployment by looking at it in the largest spirit, by using national influence such as we possess to promote that co-operation between the nations of the world upon which the prosperity of other nations leans, and of all nations in the world, ourselves in the highest degree. I say ours in the highest degree—for the reason that we have got to pay for what we eat by what we make, and we have got to get some one to buy what we make, and if we fail, proportionally our difficulties augment, our unemployment necessarily grows, the standard of comfort necessarily diminishes, and the whole fabric of society is threatened." That is England's position in a nutshell—Production and Exchange. Other countries wanted English products, but they could not pay for them, except by money borrowed from Englishmen. When they could not lend any more, buying stopped, production ceased, unemployment followed and a serious financial depression was experienced all through 1920 and 1921. As far as England's Government finances are concerned, she is in a much better position than any other European country. It is true that England has a very large public debt owed to English people themselves by far the greater amount, and about 900 millions sterling to the United States. But England is still a creditor country for the debts of the Allies and Dominions to Great Britain are much larger than England's debt to the United States. Within the year 1922 things are much brighter in England, exchange is righting itself, strikes are being settled, the foreign market is opening nicely, and industry is beginning to revive. So it would seem that the worst is over.

As to France the writer says that although the revival of foreign trade, the excess of exports over imports, and a freedom from unemployment trouble, has put France in a better position than England, yet "the French fiscal situation is much less satisfactory than the English, and most of France's difficulties

at the present time arise out of the disorganization of her Government finances." These difficulties arise out of three main causes: a large public debt which is the legacy of the wars conducted during the 18th and 19th centuries; the inadequate system of tax-collecting; and the disorganized condition of her industry and agriculture during the war period. But despite the tremendous strain in men, money, and devastated territory of the war days, France "has made great progress. She is more nearly self-contained than any other of the industrially advanced nations. In normal times she can produce the greater part of her own food supply. Her peasantry are devoted and hard-working, and during the reconstruction period their labour has borne much fruit. Official reports of the progress of reconstruction in the devastated districts differ, but the latest statement available on the subject says that out of 3,337,000 hectares ravaged during the war, 1,500,000 hectares were under cultivation in January, 1922. This is a truly creditable achievement. The rebuilding of houses, factories, waggon-roads and railroads in the devastated districts is also proceeding and, although there have been many charges of inefficient management within France itself, the progress of material reconstruction seems to have been satisfactory. It is undeniable that France has suffered from the general industrial depression of 1920-21, but the suffering has not been as great there as in England and in the United States." France is on a fair way of recovery, because the people are patriotic enough to work for their country's best interests. The people have a mind to work.

"The economic situation in Germany is a curious combination of industrial prosperity, national insolvency, and individual poverty. The greater part of the German people are employed; most German factories are well supplied with orders; Germans who have speculated in commodities, in foreign exchange or in stocks, have made a great deal of money within the last year; but German wage-earners find that their wages cannot buy enough food and clothing to keep their families comfortable, and the middle class is also in want, for salaries have failed to increase with the increase in the cost of living. This curious situation is the outgrowth of the financial condition of the German Government." There are really three great factors in the German economic situation, which should be carefully noted: the large indemnity charges; Germany's export

trade; and the depreciation of the mark. Norman Angell's predictions are coming true, and Germany stands in a good position to win the war yet from an economic point of view. The war indemnity charges against Germany are very great, and she must pay them by the excess of exports over imports. That crowds her country with foreign orders, it opens all her factories, and gives employment to all her workers. It builds up her foreign trade at the expense of other countries. The depreciated mark also builds up German foreign trade, so that as things stand now Germany is winning the economic war, and within five years unless conditions change Germany will be in a much better economic condition than either England or France, and possibly America. And if Russia joins with Germany in an economic compact they will dominate Europe, if not the world.

"The Republic of Austria is suffering today not only from the national antagonisms and jealousies of the war period, but from a conflict of nationalities which began long before the present century." There are Germans, Magyars, Czechs, Serbians, Poles, Rumanians, Italians and others. How to get all these different nationalities to live and work together is the problem! "From the economic point of view the Austrian Republic is in a very difficult position. National jealousies and ambitions have prevented co-operation between the new States which before the war functioned as a single economic unit. Tariffs have been enacted and export prohi-

bitions put into effect by the other Succession States which have had disastrous results for Austria."

The worst difficulty she is having is in connection with her food supply. Austria cannot feed herself at present and she has not sufficient money nor exports to buy food supplies from abroad. Added to that serious difficulty is the great depreciation of her currency. "The two things which Austria needs most at the present time are long term loans, and economic co-operation with the other Succession States. If plans at present under discussion are carried through, both seem in a fair way to be accomplished."

The study concludes with a very suggestive outline for study of these problems. The method is—a statement of the problem; a carefully thought-out list of questions pertaining to the problems, and an extensive bibliography announcing literature on the questions raised. In this way it is proposed to study such difficult problems, which are affecting the economic situation in Europe today as—The Fiscal Situation of the European countries; Fluctuations of Wholesale and Retail Prices and the Cost of Living; The Exchange Situation; The Reparation Situation; The Foreign Trade Situation; and Industrial Depression and Unemployment.

The Institute was founded in 1919. It has issued a number of most interesting and instructive Bulletins, and one of the best is the one we have just considered—The Economic Situation in Europe.

Novel Hydro-electric Installation.

A water-power station with some original and most interesting features has just been completed in Scotland at the Tweedvale Mills, Walkerburn, Peebleshire. A small head of water had been used for a long time in driving two mills by old-fashioned breast wheels. Owing to the increasing demand for power, the question of reorganizing the installation became pressing. It was eventually decided to use the water-power for generating electricity and to augment the supply of water-power by arranging a high-level reservoir into which water could be pumped during the hours when the mills were not working. Actually the mills work for about 50 hours per week. During these working hours the

water runs down from the high-level reservoir through the same pipe up which it had previously been forced, and it drives a Pelton wheel which generates the additional power required. This plan has frequently been discussed (says the *Indian and Eastern Engineer*) by hydraulic engineers, especially in connection with tidal power schemes; but this is the first time it has been actually carried out. The results have been entirely successful and reflect every credit upon the engineers who designed and carried out this novel scheme. The equipment consists of two low-pressure turbines of 110 horse-power each, while the Pelton wheel runs at 1,000 revolutions per minute and drives a 155-kilowatt generator.

The Gold Standard.

The Second Commission at Genoa strongly recommend that European countries should endeavour to return as speedily as possible to some form of gold standard but point out that before any attempt can be made Government expenditure must be reduced within the limits of national taxable capacity.

Clearly, the ability to adopt this recommendation must vary according to the present condition of finance and trade in the individual countries of Europe, which for this purpose, may be divided into three categories. In the first may be placed Great Britain and those European countries whose currency has depreciated not more than 15 per cent. In these cases a return to the pre-war gold parity seems possible within a comparatively short space of time without resort to devaluation. In the second category are those countries, such as Belgium, France and Italy, whose currencies, although showing a depreciation greater than 15 per cent, have nevertheless become more or less stabilized at levels much higher than those obtaining in Central and Eastern Europe. Devaluation here would be distinctly preferable to a process of deflation, since the latter would necessarily continue over a very long period and be accompanied by financial, industrial and possibly social disturbances. The third group, consisting of Germany, Russia and those countries in which inflation is still going on, need not for the present be considered in connection with any scheme for linking currencies to a common standard.

The possibilities of a return by European countries to some form of gold standard are governed by political as well as financial considerations, and there can be no serious attempt to achieve stability of exchange until budgets are balanced without excessive taxation and the vital questions of inter-allied indebtedness and reparations are settled with due regard to the debtors' capacity to pay. Even assuming these difficulties are overcome, other factors likely to postpone for some time any real endeavour to secure exchange stabilization are a certain reluctance to abandon the illusory notion that a return to pre-war parities offers advantages and benefits which cannot otherwise be obtained and the failure to recognize that the processes of deflation and inflation are alike injurious to national interests. But

in the fulness of time and after painful experience it will be realized that stability is the prime factor for consideration and that the interests of trade and industry are not dependent on one particular rate of exchange. There is no magic in the rate which represented pre-war parity. Trade will be served no better or no worse with sterling exchange at 50 fcs. or 25 fcs., provided that stability is assured or that the degree of variation is not greater in one case than the other.

It is generally thought that the adoption of a common standard by those countries now on a basis of inconvertible paper would immediately result in a considerably increased demand for gold and that consequently prices of commodities would fall. This view may prove to be correct, more particularly if the production of gold is restricted and the Far Eastern demand continues. But there are other considerations which point strongly against an increase in the demand for gold for reserve purposes, at any rate for some time to come. In the first place, although production has been on a reduced scale during the last few years, there has been much economy in the use of gold and very large amounts have been reclaimed from circulation. Then again there is a growing sense that large stocks of gold for reserve purposes are expensive, and Europe is in no position to indulge in such luxuries. If and when there is a return to the gold standard, its re-establishment must necessarily be in a modified form only and the gold now held would in many cases be a sufficient backing for the devaluated currencies. In any event the impoverished countries of Europe are in no position to accumulate additional supplies of gold. They want food, raw materials and machinery in exchange for their exports, not gold. Furthermore, there is in America a very large store of unused gold and to the extent that any demand for the metal for reserve purposes was satisfied by drawing on this store, whether by way of loan or otherwise, commodity prices would not be affected.

It has been decided to reorganize the Merchants' Exchange of Jamaica, which since its formation thirty years ago has been described as an agricultural and commercial society. It will in future perform only the functions of a chamber of commerce,

British Trade Prospects.*

By The Rt. Hon. Mr. Reginald McKenna.

It was perhaps natural in the reaction from the strain of four and a half years of devastating war to believe in the possibility of economic restoration along the path of less work and more enjoyment, but we should have no excuse for such belief to-day. The time for glittering promises is past. We know to-day that there is no short cut to national prosperity not even by making Germany pay. We have learnt to be cautious in our acceptance of visionary schemes, all the stages of which between their conception and their grandiose achievement are left to the imagination. Business men know that it is not the conception of a scheme but the carrying it through which is the difficult task, and men are no longer ready to believe optimism to be orders and an international treaty to be trade. . . .

How then do we stand to-day? If we look at one or two outward and visible indications of trade the optimist seems to have a pretty difficult task. Seventeen hundred thousand unemployed are not usually the forerunners of a trade boom. Unemployment so vastly in excess of the normal shows what a long way we have to go. Again, cheap money, such as we have now, is a sure sign of general trade inactivity. It is true that it raises the value of securities, but we must not confound Stock Exchange activity with trade revival. With so much unemployment and with money as cheap as it is, it would appear at first sight that it is the day of the pessimist rather than of the optimist, and yet it is not as a pessimist that I stand before you this evening. We have to look not merely to the actual state of trade but to its tendency and we have to take into account many other considerations besides the amount of unemployment and the rates current in the money market. . . .

I have noted with great interest one or two recent speeches made by the President of the Board of Trade, Mr. Baldwin, a very able, judicious and experienced man of business, and I have observed that he has spoken with quiet confidence as to the future. . . . I should hesitate to cover ground which has already been traversed by Mr. Baldwin, were it not that some of the criteria upon which we judge of the future are more readily open to the observation of a banker than even to a President of the Board of Trade. Movements

in bank advances, in internal bills, in bank acceptances, mark the very earliest stages in a trade revival. Has there been any recent movement in these figures? Are manufacturers and merchants requiring more money to finance their operations, and is their turnover more rapid? Are there more internal trade bills coming to the banks for discount? Is there a greater demand for bank acceptances to finance foreign trade, which, though it pass only between two foreign countries, still provides freights for British ships, premiums for British insurance offices, and profits for British banks? If we take our estimate of the future from any one of these evidences of trade, we find in each case some ground in support of the opinion that the volume is increasing. But they afford no indication of a coming trade boom. The most that can be said is that there is some movement and, though the pace may disappoint us, it is in the right direction. . . .

Even such expression of opinion for the future as I have ventured upon, stated as moderately as I know how to state it, must still be taken with serious qualifications. We must not forget that there are certain fundamental conditions which are indispensable to any real and lasting trade revival. Notwithstanding recent remissions of taxation I believe that the remaining burden is heavier than can be borne, consistently with the prosperous development of our trade. If I thought that the present rate of income-tax and super-tax merely operated to force an inconvenient economy upon the taxpayer, however troublesome I might find it, I should not think it my duty to call attention to it. But it does much more than this. Apart from its moral effect in disheartening the trader and discouraging enterprise, it prevents that growth of capital which is indispensable to all progressive business. The reserve which every good business man aims at building up is eaten into, and the power to provide for future development is lost. I have seen too many balance sheets not to know the sterilizing part which excessive taxation plays. We cannot hope for a healthy trade revival up to a level which we should have described as good trade before the War, until by a rigid economy in public expenditure we are in a position to make a further substantial reduction in our taxation.

There is another condition indispensable

* Part of an address delivered on May 11, 1922.

to a real trade revival. Dependent as we are upon foreign trade we cannot recover our old level of well-being until our foreign markets are restored. A peaceful settlement in Europe is of vital importance to us and I make no apology for putting our trade interests in the forefront of our foreign policy.

A good deal of attention has been directed lately to the improvement in our export trade as shown in the Board of Trade Returns, and much hopeful argument has been founded upon it. But though this development is very welcome, there is a circumstance in connection with it which must moderate our satisfaction. During the last few months very considerable loans have been made to our Dominions and Colonies and to foreign countries. The credits thus created in this country are being expended in the purchase of British goods and our export figures are consequently considerably swelled. We are lending in fact a large volume of British goods against which we have received no imports and shall not receive any except as interest is paid upon these loans. It is undeniably good for us to get our export trade under weigh, even if we have to lend our goods in order to do so, but we could not continue our trade indefinitely on these terms. The true purpose of an export is to pay for an import, and on this basis of a real exchange of commodities between ourselves and other countries trade is capable of unlimited expansion. But there is a limit to the development of trade when exports are sold on a credit to be repaid over many years.

I have seen it stated that it would be possible to make up for the decline in foreign trade by an increase in our domestic trade. I do not think, however, that this would be possible. We are too far from being self-supporting in the British Isles, either in regard to food or raw materials. Our population has grown to 47 millions under conditions in which foreign trade and shipping have become factors of the first importance in the production of national wealth. There is no reason, however, to despair about the ultimate restoration of the foreign market. Although the former trade organization of the world is gravely impaired and in many countries for the time being even shattered, the condition is not irremediable. Judicious policy, hard work, economy and a right understanding of the situation will in time restore the prosperity of the world and we have more to fear from false ideas and false hopes than from the facts themselves, however black they may appear

to us at the present moment.

There is one other observation which I should like to make in this brief survey of the prospects of trade. All calculations and the rational expectations founded upon them may be upset if values are again seriously disturbed by great monetary inflation. Good or bad trade will necessarily be attended by a rise or fall in prices due to legitimate trade demands, but a rise or fall may also be caused by monetary inflation or deflation. Our situation to-day is one in which inflation might be very readily brought about and would be very difficult to check and control. It would give us for the moment all the appearance of a great trade revival, but it would carry within it the seeds of its own destruction. A sound financial policy, which would permit the satisfaction of all legitimate trade demands for credit but would be watchful to check expansion due to the speculation which is an inevitable outgrowth of trade revival, is essential for us, if on the one hand we are to get such an increase of trade as will absorb our vast numbers of unemployed, and on the other to avoid fictitious prosperity founded upon huge speculative purchases. . . .

Taking a general survey I think that the manufacture of worsteds and woollens in Great Britain to-day has a fair prospect of a return to sound prosperity, provided that it takes with courage the path of hard work. So far no country in the world has been able to challenge successfully either your skill in spinning and weaving or your business organization. We may therefore reasonably hope that the industry will pass through the present crisis as successfully as it passed through the crisis which followed the Napoleonic Wars. But it will not be along any easy path. On that note I may well conclude as I began. There is no cause for despair, either as regards the future of your industry or the future of British industry generally, if we but reassert our old national character for steady and sustained effort and give up the delusive hope that industrial salvation can come by any other way than by good work.

The Czecho-Slovak Ministry of Commerce has decided to disallow the importation of leather for the manufacture of articles of luxury, on the ground that such leather is produced in the country. Other leather may be imported when the importer has proved that he has been able to procure more than a limited amount in the country.

Economics of our Foreign Trade.

By S. Subbarama Aiyar, M.A., Dip. Econ.,

Senior Lecturer in Economics, Madras Christian College.

Statistics of foreign trade for the pre-British period are not available, but the figures of our imports and exports for the British period reveal, among others, two important characteristics:—(1) There is a steady increase in the value and quantity of our foreign trade; (2) The exports consist mostly of raw materials and foodstuffs and imports of manufactured and semi-manufactured commodities. How far do these indicate an increase in our national prosperity, the greatest good of the greatest number?

The advantages of international trade, according to the Orthodox School, consist in the benefits due to the differences in the comparative costs of production of commodities in the different countries. For example, even if India is *absolutely* at an advantage in the production of wheat and cotton goods when compared with the cost at which England can produce these, still India stands to gain by concentrating her capital and labour on wheat, if her efficiency of capital and labour in its production is greatest, and it will pay her better to import cotton goods from England. This theory of international trade is more or less discredited to-day, because no country in the world presents the over-simplified conditions assumed by the classical economists. Firstly, the theory assumes complete freedom of exchange among countries which, however, in the present conditions of the world, seldom exists, for it is vitiated by the existence of strong monopolistic or quasi-monopolistic, federations which, often fortified by the help of political power or past experience, act in collusion with strong shipping and Railway Syndicates to turn the course of foreign trade to their advantage and indulge in several varieties of price-discriminations and 'cornerings' which are but too familiar to businessmen. Secondly, the assumption that capital and labour will be turned to such industries for which their efficiency is highest, is not borne out by experience, for fixed capital sunk in a business cannot be turned to any other, and labour for the most part is still immobile partly owing to human conservatism, aversion to move from place to place, and partly owing to the existence of non-competing grades of employment. India, at present, is fully subject to these economic tendencies

in the matter of her foreign trade. Further, since these partially help to make our capital and labour seek investment or work in the precarious agricultural industry, there is an absolute lack of competitive employments for our people. It follows that the aim should be to provide as many industries as possible within the borders of our country. It is fortunate that there is very little difference of opinion in this matter among economic experts who have at all made a serious study of Indian conditions.

An increase in the value and quantity of our exports and imports is sometimes represented to be an index of our economic prosperity. But so far as India is concerned with its vast area and immense population and consequently wide national market, her internal trade is far more important than the foreign trade. Exact statistics of the former are not available, but there is no doubt that there is immense scope for improvement in the internal exchange of goods and services by developing her means of communications and encouraging the production of several types of commodities that we require within the country itself. This will give increased work and increased purchasing power which our country stands in sore need of.

The increased value and quantity of our exports and imports must be looked at from another point of view. The exports pay for the imports (of goods as well as services). The former admittedly fetches less value, since they are mostly foodstuffs and raw materials which are given in exchange for more "valuable" imports into which more capital and labour are applied during the process of converting these raw materials into manufactured commodities. We have also to bear the cost of carriage of our goods; imports and exports, since we do not possess a mercantile marine. To the extent of this absence, the avenues for employment get less, and more of our exports sent to balance the value of our imports. If the prices of our exports do not rise *pari passu* with the rise in the prices of our imports (as is often the case), it means that more foodstuffs and raw materials, as measured by quantity, have to be sent in return for such materials, as machinery, Cotton

goods, Motor-cars, Cycles, Paper, Matches, etc.

The opening up of a foreign market means, it is said, an increase in the demand for Indian goods and consequent rise in prices which our producers are able to secure. This increased purchasing power, however, gets itself unequally distributed, since the services of the middlemen from the shipping agent to the village dealer and money-lender have to be paid. Even if something reaches the producers, most of the actual cultivators of the soil are small producers and a small increase in their purchasing power will not appreciably improve their economic status. The rise in prices

of agricultural products, however necessitates the rise in the price of agricultural labour, but it is well-recognized economic fact that the latter lags behind the former. Moreover, increased internal movement of goods, when it is brought about, will have the same effect as a rise in foreign demand, with the additional advantage that work and wages will be available for increasing numbers of Indians in the several new industries.

The foreign trade of a country, when it supplements the increased trade, is productive of very good wealth but the nature and course of the foreign trade do not satisfy them.

Railway Problems.

The termination of the Rome meeting finds delegates in general agreement that the resumption of these international gatherings after a lapse of twelve years has been fully justified.

To those who are able to see in true perspective the work which has been done it is apparent that the bringing together, for the purpose of discussing common problems, of the men engaged in railway operation in so many countries has served a useful purpose. It is not merely that the discussion of reports on the various subjects included in the agenda has brought out a wealth of fact derived from experience, and has indicated the lines of progress in the railway transport which in itself is an achievement of value, but that opportunities have been given day by day of exchanging ideas in places outside the meeting rooms with a freedom which could not be associated with the making of a public statement of opinion or policy. It is as much in this unofficial intercourse—perhaps even more than in the formal debates—that the value of the Congress has been revealed.

General managers, engineers, and those concerned with the operation of goods and passenger traffic under varying conditions have been made to see their own special problems from a new angle, and will approach their solution with renewed hopes and a larger vision. The international functions of railways—the part they play in promoting social and trading relations—have naturally received attention, and the Congress has sought methods for simplifying the passage of passengers and goods across frontiers. Post-war conditions have made it necessary to impose somewhat stringent regulations, but it is believed that Customs and passports procedure could now be

simplified in a majority of cases, without incurring any risk. The definite suggestion which has emanated from the Congress, that mutual Customs stations should be established at all frontiers.

On such subjects as methods of charging for the conveyance of goods the interchange of views has made it clear that widely divergent systems must continue in force. Practice on the Continent, in the United States of Canada, and in Great Britain differs owing to the need which is imposed on the railway administrations in these countries of adjusting their methods and rates to the requirements of industry and commerce, and efforts are being made to effect reforms which will reduce operating costs without sacrifice of efficiency; but there was frank recognition of the fact that the railways are the servants and not the masters of the trading community. Attempts will be made in all countries to reduce the cost of handling goods traffic by the use of waggons of higher capacity, and economies in operating goods as well as passenger traffic will, it is anticipated, be achieved by the use on a more extended scale of electric traction.

As the *Times* puts it the discussion of this branch of railway operation indicated the wisdom of not attempting to formulate definite rules as to the practice to be adopted. The use of a common system and the standardization of equipment within national boundaries is regarded as desirable, but it is felt that the choice of system must depend on the conditions under which railways are operated in different countries. When the experience of the next five years is revealed at Madrid it may be possible to frame rules, but in the present stage of development those who are attacking the electrification problem must be given a free hand.

Europe's Industrial Reconstruction.

In an address delivered before the annual convention of the Chamber of Commerce of the United States on May 16 at Washington, Mr. Arthur Balfour, Deputy President of the Association of British Chambers of Commerce, gave his hearers an instructive review of the economic and industrial situation in Europe.

After expressing the view that, while progress towards reconstruction had appeared to be slow to those in close touch with the situation, it had, judged by the experience of past history, been extraordinarily rapid. The real financial strain which had disastrously affected the industry and commerce in all European countries had been the enormous burden of taxation. One of the most disastrous features of the war taxation in every country was the fact that the administration's interest was to collect the maximum amount of taxes possible, and this had caused the revenue-collecting authorities to insist on assets, particularly stocks, in the balance sheets being taken at the highest possible figure which they could justify. This had resulted in inflated profits.

"In normal times," said Mr. Balfour, "you and we, as prudent men of business, would have kept on reserve substantial amounts to meet the fall which we knew was inevitable in the value of our stocks. These reserves have been absorbed by taxation, but the worst feature of the situation is that whereas the value of these stocks has now disappeared the liability to taxation against the values on which they were based still remains, and what was intended to be a tax on income has now become a tax on capital, with disastrous results to many well-established and well-managed concerns in all European countries. It will take many years to place the industrial concerns of Europe on the same sound financial footing which years of experience by prudent business men had secured for them when the war broke out. One of the most disastrous features about this situation is the fact that many of the smaller concerns seem fated to disappear, and they were after all a most excellent training ground for industrial and commercial men. Happily taxation which was temporary in disappearing, and with its disappearance the Governments of the various countries will leave the management of the business, and the prudent making-up of the balance sheets, to the discretion of the business men of their various countries."

WAR DEBTS AND REPARATIONS.

Dealing with war debts and reparations; which, he said, constituted another great menace to industrial and commercial prosperity; Mr. Balfour declared it to be the absolute determination of the British people to pay at the earliest possible moment the whole amounts they owed; but he would not hide the fact that this was going to strain the resources and the courage of the British nation to the very utmost. The new situation which had been created was that the U. S. for the first time was the great creditor nation of the world. There were two kinds of debts owing—those which related to pre-war debts, and might be looked upon as for productive purposes, and those which were incurred entirely on account of the war and were not productive, but destructive. These figures to-day had been merged, but it was well known that the bulk of the amounts owing were unfortunately incurred for destructive purposes. There was only one way in which the debts and this reparation money could be paid, and that was by vast and continuous efforts on the part of the people of the country who had to pay, and a great increase in productive capacity per head of population. There must be more strenuous labour, aided by improved methods of production and organization. The only other alternative was a great reduction in the standard of living. It was the common interest of all the countries not to impose such burdens on any nation, even those who were directly responsible for the greatest wrong which had ever been imposed on humanity, greater than that nation was able to bear, or such as would reduce their standard of living to a very low point. It was highly detrimental to the world as a whole that the standard of living by coercion of this kind in any one or more country should be reduced to so low a point that it would result in such countries producing goods through low rates of wages at a cost which would fundamentally injure the export trade and the well-being of other countries.

One of the great difficulties in the way of free trading to-day was the question of exchange. There was no royal road to sudden improvement in exchange; it depended, in the first instance, entirely upon productive and honest work; and, in the second instance, on the faith of integrity of each individual nation. No conferences of any kind would

adjust the exchanges of the world. The less politicians and Governments had to do with attempts to adjust the exchange, the sooner we were likely to reach a safe and steady basis on which we could trade.

Having regard to the enormous liquidation of war stocks which had taken place in every country, was it surprising that industry and commerce had been vastly disturbed? In Great Britain alone in the past two years the Government had disposed of 700 million pounds worth of war stocks, a quantity of material which closely approximated the total exports of Great Britain in some of the pre-war years.

These war stocks in all the countries in Europe were now being gradually absorbed and the way was being made clear for the production of new material, which, he believed, will shortly be required for real and immediate use. He was able to report many distinct and hopeful signs in Europe, and particularly in Great Britain, of a real return to gradual prosperity.

Mr. Balfour referred also to the movement in wholesale and retail prices and the housing problem, and gave a brief review of the conditions in France, Belgium, Germany and Russia.

Trade Unions in Bombay.

For some time past the Labour Office has been collecting information regarding the Trade Union movement in the Presidency and the results of the enquiry are published in detail in the current issue of the *Labour Gazette*. From the tables given it appears that there are at present nominally in existence 9 Unions with 27,675 members in Bombay, 10 Unions with 24,185 members in Ahmedabad, and 3 Unions with 6,054 members in the rest of the Presidency, or a total for the Presidency of 22 Unions with a membership of 57,914. The industrial Disputes Committee in their report stated that there were nominally in existence 48 Unions with 79,614 members in Bombay, 12 Unions with 20,863 members in Ahmedabad, and 17 Unions with 8,254 members in the rest of the Presidency. The reason for this large discrepancy is due to the fact that many so-called Unions were nothing more than Strike Committees. The number stated by the Industrial Disputes Committee, says the *Labour Gazette*, "were classed as nominal, while the latest figures are those from active Unions consisting of a fair number of regular "dues-paying members" established with office-bearers or other Union officials. The Unions not included in the latest figures were mostly Strike Committee which sprung up when a dispute was in progress only to dwindle gradually and disappear after a settlement was reached. The organization of these Unions was discontinued, when work was resumed. Subscriptions were, in some cases, collected for short periods, but these subscriptions, too, ceased in many cases owing to lack of enthusiasm on the part of the members."

In Bombay the main Unions are :—

- (1) The Indian Seamen's Union.
- (2) The Bombay Tramway Union.
- (3) The B. B. & C. I. Railwaymen's Union.
- (4) The G. I. P. Railwaymen's Union.
- (5) The Port Trust Workshop Union.

Of these, the first named, is financially the strongest. At the moment Bombay City possesses no active Unions of mill workers, although mill hands form by far the largest and 65 per cent of the industrial disputes in the twelve months ending 31st March 1922, were in this industry in the City and Island.

In Ahmedabad, on the other hand, 70 per cent of the Unions are formed from various sections of textile workers. Subscriptions are, it is reported, regularly paid, the Union affairs are conducted systematically, and they have secured the recognition of the employers. Numerically and financially, the Ahmedabad Unions are the strongest in the Presidency.

The details given in the *Labour Gazette* tables include the names of the Unions, the number of members and the office bearers, the income, expenditure and rate of subscription per member to the Unions.

The Imperial Institute Advisory Committee is enquiring into the possibility of extending the use in Britain of timbers produced in the various parts of the overseas Empire.

According to French official statistics, goods to the value of 2,356 million francs (over 10 per cent of the whole export) were sold in 1921 to Germany.

Indian Fiscal Commission.

A special correspondent writes from Simla:— In my last telegram about the Fiscal Commission I gave your readers a sufficient glimpse of the skirmishes that were then raging during the report stage of their deliberations precipitating towards a final split among the members. Subsequent events have proved the correctness of that forecast and the Commission has now dispersed after signing the report with this important reservation that five of the Indian members including the president (Sir Ibrahim Rahimatulla) will append to it their minute of dissent in the course of a few days.

The dissenting members besides the President are Messrs. Narottamdas Morajee and Jamnadas Dwarakdas of Bombay, Mr. G. D. Birla of Calcutta and Mr. T. V. Seshagiri Iyer of Madras. As might have been expected by some, the Parsee element consisting of Sir Manackjee Dadabhoy and Prof. Coyajee has completely thrown in their weight and lot with the European clique even on those points where the five Indians have agreed to differ. The minority note will probably be ready in Bombay or Poona by the end of this week and circulated for signature among the five before it is tagged on the report.

The fields of enquiry covered by the Commission in their tour of the country since its appointment in September last have been very wide and varying and although the members at one time were reported in Simla to be generally agreed on the nature of the solution of the difficult problem, differences ten times more serious arose, it is understood, on the ways and means of its application in several parts. It must not however be assumed that any party of the Commission was adamant or unbending; on the other hand, there are sufficient indications to assert that all the sides were anxious for a compromise and they worked for it with commendable spirit. But the gap was still there and even the appointment of a sub-committee to draft the report in a way that would suit all the different sections could not be of any avail. In fact, the draft of the sub-committee was considered by some of the members to be even less acceptable than the one which was being framed in concert with all the members. A full compromise was therefore out of the question especially in such complicated matters,

which involved the business interests of several classes. Hence the report, it is stated, bear the trace of grounds yielded for the patch-up work but not sufficient to cover the wide gap. Speculation has grown rife round the report of the Commission but the greatest secrecy is being maintained about it. Any attempt at a forecast on the subject especially when the minority has still to express its views finally as regards some important points where they have been compelled to differ from the rest of the Commission, might perhaps be misleading. But a careful analysis of all the factors would lead one to suppose that the principle of protection must have generally found support among the members of the Commission. Acceptance of this principle must necessarily precede some difference of opinion as to the extent and scope of its application. While the minority may be expected to be strongly in favour of complete protection, the majority of the Commission will presumably grant what was often pithily remarked by some in the course of the enquiry as "discriminate protection." The question of Imperial Preference having loomed large throughout the Commission's enquiry is also believed to have become a zone of contention and judging from the attitude of the members during the examination of witnesses it might be inferred that while the five Indians would not agree to it in case of any loss occurring to this country by the adoption of that principle the European *cum* Parsee section must have stuck to it leech, like on the plea of India enjoying the benefits of Imperial connection as a member of the British Empire.

Over the contentious problem of excise duty, the Commission appears to have spent some anxious time but the result of their deliberations on this point must be left to be told by the future although there is an impression created in the minds of some that in this respect the Bombay merchant view being a little uncompromising must to a certain extent have accounted for the split among the members. It could however be reasonably expected that the Commission as a whole must have agreed to a policy of greater industrialization in the country. But greater industrialization means greater capital and increased borrowing capacity and cheaper import of machinery. In these respects the Commissioners must have met with some difficulty

in arriving at some unanimity and it is not improbable that the minority might have something to say on one or two of these points as well.

I have thus attempted to present to your readers a list of certain possibilities and probabilities about the future of the Fiscal arrangements in this country in connection with other parts of the world as could be gleaned from the several factors and other circumstances which faced the Commission during and after their enquiry. Whether the majority or the

minority are right in their conclusions will be left to be judged by time but meanwhile we may offer a word of tribute to Sir Ibrahim Rahimatulla and other members of the Commission for having tried each according to his light to solve one of the most perplexing problems that ever faced this country. Although India would have been more fortunate if the composition of the Committee had been more satisfactory, let us now wait and see how the minority will impress the people of India. A great deal is anticipated from them.

Fallacy of State Factories.

Mr. A. E. Goodwin, Secretary, The Federation of Master Printers, London, E.C.1, writing to the *Times Trade Supplement* under date April 25, says :—The statement made by Dr. Macnamara, Minister of Labour, that the opening of State factories is “thundering bad business” confirms the views of those who have proper opportunities to judge the real state of affairs which is concealed from the general public through the camouflaged statements put forward by the heads of Government factories, and county and municipal trading departments.

It is interesting to know that Dr. Macnamara is to-day holding the opinion which he held in 1903, when, as a member of the old London School Board and editor of *The Schoolmaster*, he published a thorough and searching report on one phase of municipal trading. It is nearly 20 years ago, but the basic principles of the economic value of State trading are as true to-day as they were then, and it is refreshing to find that this Minister, after years of additional experience of public affairs, has maintained his independence of judgment.

A glaring example of a Government factory, which was started during the war and kept going long after is the State printing works at Harrow, where about 800 workers are employed on work previously done as efficiently and more economically by private enterprise.

The Geddes Committee in commenting on the expenditure at these works, expressed agreement with the general principles enunciated by Dr. Macnamara, but did not direct attention to the obvious remedy—the immediate closing of these works.

There is a strong case for an inquiry into the working of this experiment in State

competition with private enterprise.

Evidence is available to show that when printing for Government Departments was recently put out to open tender contracts amounting to £70,000 were secured by printing firms and only about £400 by the State printing works. But important contracts, such as the Telephone Directory and the Postal Guide, have been given to the State Printing works without open competition.

The Government has not seen fit to adopt all the recommendations of the Geddes Committee, but if the sentiments expressed so strongly by the Minister of Labour are shared by his colleagues in the Government they certainly have an opportunity to show that in one direction they can go a step farther and promptly close one avenue of wasteful expenditure—viz., the State printing works.

The House of Commons have passed the first reading of the Empire Cotton Growing Corporation Bill, providing a levy of sixpence on the spinners for every five hundred pounds weight of cotton, towards the funds of the Corporation. Mr. Hurst in introducing the Bill pointed out that the Egyptian cotton crop was only three-sevenths of the pre-war crop and it was expected that only 8½ million bales of American cotton would be available this year compared with 13½ million bales before the war, whilst there was an illimitable vista of cotton supplies in Sudan and Tanganyika.

The bankruptcies declared in Italy from January 1 to April 30 last totalled 1,072 against 363 and 222 in the same periods of the years 1921 and 1920,

Vernacular Vs. English.*

By Sir Chimanlal Setalvad,

Vice-Chancellor, University of Bombay.

The tide of democracy is flowing in. India has been moved by this world impulse and she demands responsible self-government and recognition of her status as an equal member in the British Commonwealth. The British Parliament have taken a substantial step towards full responsible Government in India by enacting the Government of India Act, 1919, under which Councils elected on a wide franchise have been brought into existence in the provinces and the administration of various departments has been transferred to the care of Ministers responsible to the Legislative Councils; and largely elective central legislatures with effective powers of control over financial and other matters have also been created.

EDUCATIONAL OBLIGATIONS.

I desire to invite attention to the larger obligations and needs in the matter of education which are the necessary implications of these constitutional changes. The greatest need in popular or democratic government is 'Order and Progress' and this can only be secured by education. Extension of suffrage must be accompanied by extension of training for the intelligent use of the suffrage. The State can protect itself only by securing that voters acquire superior knowledge to understand their responsibility and the methods of discharging them. Voters of all classes must be trained to exercise intelligent and independent judgment in casting the ballot. Unless this is done, Aristotle's sequence—democracy, mobocracy, despotism—is sure to come true. Popular and representative government cannot exist and thrive without universal education and the first cannon of State policy must, therefore, be the education of the masses. Universal education must not, however, be confined to the children. Bringing all the children in the country into the schools for a prescribed period will bear fruit when these children grow up and get the vote. But the present voters are the parents of those children. And universal education not only of the children but of the adults must be undertaken. 'Educate your masters,' said Robert Lowe at the time of the Reforms Act in 1868

in England. That is what is necessary to be done in India to-day.

But let us not be under the delusion that universal education alone will make democracy really safe. In speaking of universal education we ordinarily mean the ability to read and write. We assume that the literate possess a higher intelligence and knowledge than the illiterate. This is not always true. There are many men who have not learnt how to read and write but still possess natural shrewdness and intelligence which enable them to exercise sound judgment. The men who merely read and write but are unable to think for themselves are sometimes more likely to be swayed by half-truths and lies disseminated by the party press and to be led into hasty and ill-considered action. It is thinking that is of greater importance than reading and reading is necessary only as a means for proper thinking. The people, therefore, in addition to reading and writing must be taught to reflect and judge. Higher education is, therefore, essential.

VALUE OF HIGHER EDUCATION.

There is special need of capable and honest leaders, and it is here that the universities can render inestimable service to representative government by producing men, who, having acquired the habit of clear thinking and being inspired by wide outlook and liberal ideas, can rise above passion and prejudice and can lead the masses to the right path. The nation needs citizens with proper equipment and ideals and the university can and ought to supply them. This is a function which goes to the root of the welfare of the State and the State must help the universities freely and liberally. The view that proper provision for higher and university education is not an obligation of the State, whose main concern should be elementary education, is, I venture to say, not quite sound. That doctrine has not rigidly guided educational policy even in England. In 1913-14, the total grants to the universities and colleges of the United Kingdom were close upon half a million pounds. In 1919-20, they rose to three-fourths of a million, with £3,00,000 for non-recurring grants, altogether well over a million. In 1921, I believe, a further half a million

*Part of Address delivered at the Convocation of the Bombay University, August 1922.

was added. And Oxford and Cambridge, who for centuries had relied wholly on their own resources, are also to receive State aid.

In order to fit young men to be proper citizens the university must give them training that would bring them into harmony with their environments. The great danger to man and civilization does not come from Nature but from man's own passions. What is happening in Russia and Ireland demonstrates how human knowledge and power over Nature can be made barren by political or economic conflicts. The study of history, civics, politics and social economics, must be largely encouraged in the university in order to supply training for social life, cultural life, political life and economic life. The study and practice of science so essential for economic life must be put on a sound basis not only in the university but in the lower stages, so that our growing population might win from our boundless natural resources a fuller and more varied sustenance and enrich the country and rescue it from its present poverty.

The benefits of university education should not be confined to the students within the portals of the university, but must be made available to large numbers outside as well. It is not correct to suppose that because a person has not been to a secondary school he is not capable of imbibing higher knowledge. By means of university extension and extra-mural work, a large portion of the population can and should be brought under the influence of higher education. This alone will enable the university to lay sound foundations for responsible government in the country by fulfilling its mission, according to Cardinal Newman, of 'raising the intellectual tone of society', of 'cultivating the public mind' and of 'purifying the national taste.'

THE VERNACULARIST PARTY.

But it is said that it is hardly possible for the university to carry out the programme above indicated, so long as the work of university education has, under the present system, to be carried on through the medium of a foreign language. It is maintained that the only way in which education can be extended and made effective is by having both instructions and examinations conducted through the medium of the vernacular languages and that English should be taught merely as an additional language. Mahadeo Govind Ranade took the lead in this matter years ago and we now have both in the univer-

sity and amongst educationists outside, a strong and growing party of vernacularists dissatisfied with the place of the vernacular languages in Indian education and bent upon forcing the pace of reform in this matter. Mr. Chancellor, I am a vernacularist myself. But to accept a broad general principle is not necessarily to support every detailed proposal in which it might be sought by enthusiasts to give effect to it.

After dwelling upon practical difficulties in the way of changing the medium instruction from English to the vernacular, Sir Chimanlal proceeded :—

Then there are higher considerations still, which no responsible educationist can overlook except at the risk of squandering away the slow and laborious achievements of decades and pushing the higher education of the country down the easy slopes of reaction and decay. At the moment when the Imperial Civil Service and other competitive examinations for our premier services have begun to be held in this country as well as in England, it behoves our universities to steadily persevere in acclimatizing the highest culture in our midst, so that our alumni winning the highest places in these competitions here, might meet their English colleagues selected in England out of the pick of the English universities, on absolutely equal terms. No equality established by law from above is worth anything unless there is as a matter of fact a substantial equality of intellectual training and attainment from year to year between the recruits obtained simultaneously from the two countries out of the best products of two different systems of education.

The Indianization of the higher services in our country could proceed apace with increased efficiency and economy only in proportion as the Indian recruits, naturally superior to their English colleagues in knowledge of the country and the people, prove themselves at least their equals in character, culture and faculty also. The law can only throw the doors open and keep them open for a space until the results of the new adventure are visible to all. It is for the Indian universities and their alumni to seize the new opportunities thus offered to them with a will, and prove by resolute and rapid advances that the Indian statesmen who fought strenuously for and won this privilege of equality were fully justified in their faith in the moral and intellectual capacity of the rising generations of their country.

EFFECT OF VERNACULARIZATION.

Are our universities then already on a level with the English Universities in the higher branches of study? And if we have to admit in all humility that they are not, that culture here neither attains to the heights familiar to it in English centres of learning, nor is it yet so well planted in our soil as to take firm root and develop a vigorous growth by its own unaided effort,—the question is pertinent, what would be the effect of a rapid vernacularization of the universities on their life and vigour and growth? If determined vernacularists will look at the question from this higher point of view, perhaps they will begin to understand why an increasing number of responsible educationists are becoming more and more resolved that they will defend the real interests of higher culture in this country as strenuously as they are being assailed.

UNITY OF INDIA.

Furthermore, our solution of this problem is also bound to react on an interest higher still than that of the highest culture, and that interest is the unity of India. The unity of India has been a plant of extremely slow growth. Cashmere, Punjab and Sindh became integral parts of India only under the Mogul Empire. Bengal and Delhi became firmly welded together in one political organization only under the same regime. The Grand Mogul monarchs from Akbar to Aurangzeb further advanced to weld the North and the South of India together into one political whole, but the task proved altogether beyond their capacity. The Marathas from their western fastnesses then tried to bring all India together under the *Bhaga Jhenda*; they put forth surprising vitality; they produced a series of great leaders, giant in daring and marvels in adaptability to the surroundings; but neither their clouds of light-armed horse-men, nor their tentacles of policy, thin as gauze but strong as wires of steel, availed against Ali Verdi Khan in the east, or Haider Ali in the south or the trans-montane Moslem invader from the north.

By that time, however, the naval supremacy and imperial policy of England had isolated India, and it is this Power with a sympathetic tolerance for the various races, religions, languages and levels of Indian humanity, greater than that shown by Indians amongst themselves, and armed, moreover, with the science and resources of the nineteenth century, which has really achieved or

rather laid the first solid foundation for that unity of India, which till our own day has been a concept or a vision of dreamland, rather than a concrete possession in the world of reality. This unity of India is not even yet a permanent acquisition of our inner political consciousness. The educated few have grasped it, but it has still to spread among the masses, and like liberty, like Swarajya, like economic and cultural self-sufficiency, it can be securely won by us only by continuous vigilance and well-directed education for decades to come. I may in concluding this argument quote the weighty sentences in which a member of the Senate has recently set forth his own conclusion: 'Indian patriotism has to transcend local nationalisms, or else it cannot build up or sustain a united India. Uniform education, through the medium of the English language in its higher stages, is more important than a nationalist education, at least during the period of transition. It is to be hoped that Indian nationalists will prove themselves sane enough to realize the inestimable value of the moral bond that a uniform modern education all over India can furnish making for unity and harmonious growth.'

NO SET-BACK TO VERNACULARS.

How then, it will be asked, are we to raise vernacular literature and the popular education of the masses through the vernaculars to higher and higher levels of culture? It has been often noted, and the statement will bear repetition, that facilities of expression trained through whatever medium are available for the many-sided cultivation of the mother-tongue, if the writer or speaker or poet begins using his own tongue for expressing himself before his mental powers become set in fixed grooves. The marvellous advance of Bengali language and literature at the hands of men of genius like Bankim Chandra Chatterji and Rabindra Nath Tagore is a noteworthy fact in the history of world literature. If our own Presidency has not yet achieved a similar new birth in any of its vernaculars, the progress here has still been great in mere volume and is remarkable in its steady advance from high to higher qualities. My acquaintance with Marathi literature and its recent history are slight, but still I too have heard of the essays of Chiplonker, Agarker and Patwardhan, the novels of Apté and Joshi and the plays of Khadilkar, Gabkari and Kolhatker. And coming to my own Gujarati language and literature, the progress has been continuous and varied from the

works of Narmadashankar and Dalpatram and Navalram, Mansukhrem, Mahipatram, Mohanlal Jhaveri and Karsondas, through Ambalal Sakarlal, Manilal Nabhubhai, Dolatram Kriparam, Harilal Dhruva, Ichharam Desai and Goverdhanram Tripathi, to writers still happily active although many of them no longer in their prime such as Narsinhrao Divatia, Keshav Dhruva, Manishanker Bhatt, Anandshanker Dhruva, Ramanbhai Krishnalal Jhaveri, Nanalal Kavi and Kanaiylal Munshi. Here are twenty names of authors known for cultured work of intellectual eminence wherever the Gujarati language is spoken and read, and any one familiar with modern Gujarati literature could easily add another twenty names of perhaps nearly equal eminence and popularity to the list.

NO NEGLECT OR STARVATION.

Our vernacular languages and literatures, then, are so far from being neglected and starved by our present system of university education, that in poetry and in philosophy, in history and in travel, in the novel and the play, and in many other forms they are producing more work of higher quality and certainly of greater variety and appeal also than perhaps at any former period to their long history. The present condition of our vernacular languages and literatures is not only no stigma on our present system of university education, but, on the contrary, is the best testimony to its life and vigour, no less conclusive because indirect.

I hope I will not be misunderstood. I have already said I am a vernacularist myself. I too want vernacular universities and higher

education through the medium of the vernaculars as much as anybody else. My whole difference with other vernacularists is in this and in this only, that while they hold the Bombay University to be the proper field of experiment, while they want the Bombay University itself gradually transformed into a vernacular university, that is a view which I cannot possibly endorse. I want the Bombay University to continue as it has been from the date of its foundation, a modern university, teaching the highest world culture through the medium of the English language, and if possible also co-operating with Western universities of the highest eminence in the fields of research.

ONE WINDOW TOWARDS THE WEST.

I want the University of Bombay to be our one window towards the West through which world culture might continue to pour in and humanize and elevate us, and I want exactly similar universities at Madras and Calcutta and Rangoon and Colombo also to unify the Indian intellect in the highest realms of human thought and research. But I also want, at the same time, a Marathi University at Poona, a Gujarati University at Ahmedabad, a Kanarese University at Dharwar and so on. When these vernacular universities advance from perhaps small beginnings and experimental courses to higher culture in the fullest sense, their work will converge more and more in one field of knowledge after another to that of the University of Bombay. And then will dawn the day, decades hence, when we shall have really to face the question of altering the medium of education and examinations inside the University of Bombay itself.

The Eighth National Exposition of Chemical Industries of the United States will be held this year in the Grand Central Palace, New York City, from the 11th to the 16th September, inclusive. Practically the entire chemical and chemical equipment industries of the United States and Canada will be represented at the Exposition as a unit. The latest developments and improvements in chemical equipment during the year are to be placed on exhibition as well as the usual assortment of new products which have been developed. Plans have been made for the display of practically every type of chemical product from the raw material to the finished products ready for use by the rubber leather,

textile and other chemical consuming industries. The list of proposed exhibits includes automatic packing, weighing and loading machines, fuel conserving devices, and laboratory equipment relating to the very latest ideas in the up-to-date chemical laboratory. Moving pictures covering all phases of the chemical industry will be shown each evening and will be accompanied by lectures by some of the leading chemical authorities in the United States. The Exposition is under the direction of Mr. Charles F. Roth and Mr. Fred W. Payne, who inaugurated the idea in 1915 when the first exposition was held in the United States.

Agriculture in the Punjab, 1920-21.

By "Rusticus."

We are very glad to see that Mr. Townsend, now enjoying a well-earned spell of leave, was back again at his old post of Director of Agriculture in the Punjab during the latter part of the year covered by this Report. His ability, energy, enthusiasm and experience must have been of special value to the Agricultural Department after the severe losses it had suffered owing to the departure of Mr. Roberts to become manager of the British Cotton Growing Association's grant at Khanewal and of Mr. Faulkner to become Director of Agriculture in Nigeria. It must, in the natural order of things, be some time before the two new Deputy Directors of Agriculture who arrived during the year will compensate to any great extent for these losses but it is satisfactory to find that, in these days, when, as personal enquiries recently made by the writer of this notice have shown, service in the Agricultural Departments in India is much less attractive than of yore to graduates of British Universities, recruits of such excellent quality could be obtained. We trust that the Government of the Punjab will be equally successful in filling the six other Imperial posts which Mr. Townsend says have lately been added to the cadre. It is, at any rate, probable that men will prefer a Province in which they are sure of a hearty welcome to one which has no belief in scientific agriculture; in other words, that they will go to the Punjab; where Mr. Townsend notes with gratitude that the Legislative Council show no inclination to be stingy to the Agricultural Department rather than to Bihar and Orissa, where the Legislative Council would, apparently, like to economize by doing away with the Agricultural Department altogether.

Mr. Townsend's Report is short but stimulating. Wheat and cotton are the two principal crops in the Punjab. Mr. Milne, the Economic Botanist, is working as strenuously as ever to evolve varieties of both even better than those which have taken such a firm hold in the Province and for which it is so much indebted to him. It must be a source of gratification to the Provincial Agricultural Department that, in Punjab 11, it has discovered a variety which is better suited to the local conditions than any of those which have emanated from Pusa. Healthy rivalry between the local Departments and Pusa cannot

but result in benefit to Indian agriculture as a whole. In Punjab 8A, Mr. Milne would seem to have "gone one better" than Punjab 11. In nearly all the comparative tests so far conducted whether by him or the Agricultural staff, it has maintained its superiority over all the other varieties tried. Cultivators are now asking for it for sowing purposes and it is being given out to them on an extensive scale. It will thus undergo an exhaustive test under conditions which will enable its real worth to be gauged but Mr. Townsend has little doubt of the result and considers it not improbable that it will eventually supplant Punjab 11, especially in the eastern part of the Province. Similarly in 285F cotton, Mr. Milne has improved on the celebrated 4F. Spinning tests have placed it beyond question that 285F is the more valuable cotton and, if the experience on the Military Farm at Okara, where it yielded $1\frac{1}{2}$ more maunds of unginned cotton to the acre than did 4F, is repeated when it is grown on a more extensive scale, there can be no doubt that the Agricultural Department will have to embark on the task of effecting its substitution for that variety. There should be little difficulty about this for the Punjab Agriculturist is very much alive to his real interests and has small hesitation in following a lead given him by the Department. We shall know more about the position when the next Report appears for 285F was grown on 2,000 acres in the canal colonies in 1921-22. The indigenous cottons are not being neglected. Sardar Darshan Singh, the Deputy Director of Hansi Circle, has made a special study of them and in his Bhatla white-flowered variety has found a cotton which not only yields more heavily than the local variety but has a higher percentage of lint—37 against 33 or 34. No more striking testimony to the work of the Punjab Agricultural Department could be desired than that which is furnished by the figures for the acreage under Punjab 11 wheat and American cotton. The area under Punjab is increased from 196,500 acres in 1917-18 to 634,000 acres in 1920-21 whilst, in the latter year, there were 524,500 acres under American cotton against 635,250 under indigenous varieties. It is somewhat surprising that Mr. Townsend should note that "experience shows that the view held by Messrs. Milne and

Roberts that American cotton generally needs better land, better water-supply and better cultivation than does country cotton is correct; where those conditions are lacking, it is wisest to sow *desi* cotton." There is surely nothing new about this conclusion. It was reached by the Indian Cotton Committee four years ago.

About other crops, Mr. Townsend has little to say, "VERY useful work continues to be done by the Economic Botanist on gram, oats, sugar-cane and Scotch potatoes" but we are not told how far it has progressed. It is curious that sugar-cane has so far proved not only the most successful crop on saline soil but also the most satisfactory crop for its reclamation. Rice and jawar (jonna) proved complete failures on such land whilst the average outturn of wheat was only 31 seers on land cultivated by bullock power and 13 seers on land worked by machinery.

The Government of the Punjab regard the account of the Agricultural Engineering Section as disappointing. If, as would seem to be the case, the work of this section was confined to pumping and boring operations, there is considerable justification for this view for the number of bores sunk only increased by 32 to 392 and there was a slight fall in the percentage of successes obtained. Mr. Miller Brownlie reports that the number of enquiries regarding lift irrigation showed no advance over that for the previous year and attributes this to the high prices still prevailing for plant and material which deter landowners from embarking on projects the cost of which will affect their returns for many years whilst they hope, by postponing improvements to obtain the advantages of a lower market. In this connexion, we are glad to see that the Punjab Government are alive to the possibilities of power pumping in those parts of the Province to which canal irrigation cannot be extended. On these possibilities great stress was laid both by the Cotton and Sugar Committees, the value of whose Reports in regard to questions of general agricultural development is not perhaps as generally recognized as it deserves to be.

A very satisfactory feature of the year was the striking increase in the number of imported implements sold. Nine hundred and forty-four of these were disposed of against 432 in 1919-20, the cheap Meston ploughs being specially in demand. Raja ploughs and fodder

cutters were also popular. Mr. Townsend thinks that, in spite of high prices, a difficult corner has now been definitely turned. He adds that it is not sufficient for a man to buy a Meston or a Raja plough. He must be taught how and when to use it. Much of the time of the district staff is being taken up in teaching him. It could not be better spent. The figures for country-made implements are not quite so good. There was, in fact, a very slight fall in the number of these sold—693 against 698. Bar harrows and drills are the most in demand. Tractors are being tried in the Punjab but Mr. Townsend regards the outlook for them as anything but hopeful.

The Agricultural College is prospering. There were 228 applications for the 54 vacant places and Mr. Townsend was thoroughly satisfied with the type of lad who sought entrance to the College. For many years past, four or five times as many boys as there was room for have tried to enter the College and it was obviously high time that the capacity of the College should be increased. This is now being done. For the first time, the students sat for the University degree of B. Sc. Agri. Only six out of eleven were successful in obtaining it and, though Mr. Townsend points out that 54.5 of passes was a higher percentage than was reached in the B.Sc. examination of the Science Faculty of the University, he is rightly determined to have the weak points in the course put right.

Whatever may be the merits from other points of view of the policy of retrenchment in the Indian army, it may prove of benefit to the Punjab Agricultural Department which hopes to obtain some of the Cavalry runs no longer required for the purposes for which they were originally given and to utilize them for seed and demonstration farms and also as material for attacking one of the most important problems before the Department, the improvement of the fodder supply of the Province. The Punjab Government are not so convinced of the necessity for additional farms in the areas in which the cavalry runs are situated and put forward the suggestion that one of the runs might be used for a farm worked on ordinary zamindari lines with improved methods and implements. Care would have to be taken that such a farm was worked on the lines an enlightened zamindar would follow for otherwise it would fail in its object of demonstrating that scientific agriculture is a paying proposition.

Industrial Notes from the United States.

By A. T. Marks.

Washington, D. C., U. S. A., June 26, 1922.—The President of the United States recently had the unique experience of addressing an audience roughly estimated at 250,000 people through the radio broadcasting service which has been installed in the White House at Washington, his speech of greeting being distinctly received by a gathering over 1,200 miles away and also in many other parts of the country. The magic and impressiveness of the thing lay in the very quiet and ease of it all. Just an arm chair, an ordinary radio-phone outfit, and quiet, distinct speech such as one would have across the table with a friend over coffee and cigars.

It is natural—inevitable, in fact—that into the subconscious mind as we think of that little talk there should come the image of Marconi, the real inventor and pioneer in wireless communication.

Marconi's original apparatus consisted of a rather primitive receiving and transmitting set, and a wire which led out through the roof of the house, and which provided a single vertical antenna 120 feet in height. The receiving apparatus included a small glass tube (the coherer) which contained two silver pole pieces with their ends about one-fiftieth of an inch apart. Between the ends was a mixture of nickel and silver filings with a trace of mercury. Normally, because of their resistance, the filings prevented the flow of current. When the radio waves were received, the resistance broke down and the local current passed through. Marconi had arranged a small hammer, which rapped continuously upon the coherer by means of a local circuit which was closed when the radio waves passed through the metal filings. When the waves ceased the hammer gave its last rap and the tube was left in a decohered condition ready for the next transmission. This early instrument worked satisfactorily—and to-day, while the American improvements have been many and varied, and the refinements and developments most extensive and comprehensive, the radiophone in practically all of its fundamental principles harks back to the crude Marconi instrument.

ABOUT STATIC AND GASOLINE FIRES.

One of the largest automobile manufacturing

concerns in the United States has issued a warning against static and gasoline fires which is being widely noted at this time. The company says that one of our largest oil firms has experienced many fires due to the presence of static electricity either in the automobile or truck or in the service station, and to eliminate this fire hazard one of its employees has perfected a somewhat remarkable system.

Each oil-filling pipe at the service station is provided with a plug. Before the driver can open the filler cap for the purpose of running gasoline or distillate into the tank waggon it is necessary for him to insert the plug into a hole in the filler cap neck, which action unlocks the latch thus permitting the cap to be opened. Now, the point of interest to automobile owners is that the act of inserting this plug carries off any static electricity which may be in the tank or machine chassis, thus removing the danger of a spark causing a fire when the filler cap is opened, as often happens without this protection. The plug is connected to a wire which is grounded. There is also a wire connected to the end of the filler cap which is also grounded. In order to complete the circuit a 5-16 inch chain is attached to the frame and allowed to drag on the ground at all times.

There is still another danger from fire, and that is when filling steel drums from a tank wagon. A few months ago a spark, which was caused when a drum was being filled on a large ranch in one of the western states, started a fire which burned the tank wagon and all of the buildings on the ranch. For the purpose of eliminating this danger the oil company has perfected a device provided with a spring lock which holds the filling device firmly in the hole of the drum.

An automobile service station presents about as complex a problem as can be found owing to the numerous sources of static electricity. Under certain conditions refined oils passing through pipes generate static electricity. Each automobile comes into the service station charged with static, in some degree depending on the weather. Should we endeavour to insulate the car would only create a still greater hazard due to heavy

discharges;—hence we take the opposite course and make the path so easy that the “building up” of a charge becomes unnecessary and the charges are harmlessly led back into the earth. This easy path is what is known as “grounding”, and it appears quite simple; but as a matter of fact the several conduits and the motor frame present a little problem all their own.

It would be well for all automobilists to give some thought to the static problem when handling gasoline. Too little attention is paid to this phase everywhere, with many serious accidents as a consequence.

MIXING CEMENT WITH SOIL—A NEW IDEA IN ROAD-BUILDING.

Mixing cement with soil to alter the characteristics of the soils and render them more suitable for road-surfacing and general road-building is an experiment recently successfully conducted by the Bureau of Public Roads of the U.S. Department of Agriculture, and which is now proving its actual value in constant use. The treatment was first suggested and thoroughly tried out at the department's Arlington Experimental Station, where at all times constant experiments are being carried on for ascertaining best methods for road-building and the best materials for use. The results at the station warranting an extended test under actual conditions of use, it was arranged with the Highway Department of the State of California to try it on the “adobe” soil which prevails there.

The dry soil was well broken up and harrowed to a depth varying from 6 to 12 inches and mixed with cement in the proportions of one part cement to ten parts soil and one part cement to twenty parts soil. It was intended to water and roll the surface, but hard rains prevented. One section was allowed to remain untreated for purposes of comparison.

A recent inspection showed that the untreated section was badly broken up, due to the usual shrinkage cracks characteristic of adobe soils. The treated sections were in good condition and showed no shrinkage cracks. The treatment is not intended to make a hard surface like concrete, but to alter the properties of the soil so that it will be stable and resist the effects of moisture. The experiments demonstrate that cement in proportions of one part to ten parts of soil will greatly improve all roads, giving a hard smooth surface and making it remarkably serviceable, no matter what the character of the soil may be.

BUILDING A SERVICEABLE STORAGE BATTERY.

It has been recently demonstrated that electrical devotees may readily build an excellent and serviceable storage battery, and at small cost. Not only so, but a person who is not an expert electrician can easily construct it. The following is given as the plan: One cell should be allowed for every two volts and each cell may contain two or more plates, according to the desired capacity. A two-plate cell will give about 10 amp. for one hour when fully charged if the plates are about 4 inches by 5 inches.

The containers may be of glass or of hard rubber. Make a wooden mould for the lead frame-work of the plates, or, if you can obtain moulding sand, mould them from a wooden pattern. The plate should be three-eighths of an inch thick when finished. Provide a quantity of sheet lead one-sixteenth of an inch thick. Cut this into strips three-eighths of an inch wide, bend and press into the space in the plates, honeycomb fashion.

The plates are then ready to be “pasted”. You will need some sulphuric acid, red lead or litharge. Six ounces of the latter will be sufficient for six or eight plates. Mix the acid with ten parts distilled water and enough of the litharge to make a thick paste, which is pressed into the spaces in the plates. Enough for only one plate should be mixed at a time, as it sets very quickly. The plates are then baked in an oven until they are hard.

Curing is accomplished by wetting the plates several times and allowing them to dry slowly. The first time they should be merely sprinkled with the diluted acid. As the acid has considerable effect on the uncured plates they must be wetted gradually. After being sprinkled and dried the plates should be quickly dipped again and, when they have become dry, dipped for a longer time. Increase the period of dipping until the acid has no further effect, after which the plates are ready for the charging and may be assembled in the cells. Wooden separators about one-sixteenth of an inch thick are placed between the plates.

It is advisable to obtain regular separators, if this be possible, for the cost will be trifling. If you make your own, use thin wood perforated with one-sixteenth inch holes.

Use direct current for charging. For a six-volt battery the charging voltage should be from eight to twelve volts. Fill the cells with acid mixed to test 1100 with the hydrometer, and use nothing but distilled water. After

being charged for the first time the positive plate will turn a reddish brown.

The battery will not work at full strength until after being charged and discharged several times. You can use a charging current of 4 amp. to start and 2 amp. to finish. The acid should test 1300 when fully charged. If the battery is to be moved around to any extent the tops must be sealed up and the plates fastened securely so that they will not move.

NEW AUTOMATIC CONTROL PREVENTS TRAIN WRECKS.

Even with the engineer dead at the throttle, a train rushing at high speed past a block signal set against it can now be automatically stopped and its passengers saved from disaster, thanks to an interesting invention just patented here and which has been thoroughly demonstrated.

Two boxes of electro-magnets and relays—one placed between the rails and the other carried just behind the "cow-catcher" of the locomotive—are used to operate the air brake. The unique and outstanding merit of the invention is that there is no physical contact between the locomotive and the track element, and that therefore operation is certain in all kinds of weather, whether stormy and turbulent or in other difficult conditions.

The track equipment of the apparatus, which has just been tried out under all conditions on one of the largest railways in the eastern states, consists of a laminated iron electro-magnet about five inches high and two feet across in the form of a wide shallow U. At the ends of the U two large pole-pieces extend upward with their tops level with the surface of the rails. Coils of wire on the poles are connected together, and are operated by a relay placed at the side of the track. This relay, in turn, is connected with the block signal system in such a way that if the block is occupied the circuit to the track device is opened. This puts it in condition to stop a following train. As soon as the block is empty the circuit closes and the track equipment becomes inactive, so that the following train may proceed without delay.

The equipment carried by the engine consists of a storage battery, a "receiving element" and an electro-magnet contacting device, called an "engine relay". Associated with these is the mechanism for operating the air brake. The engine receiving element is a U-shape magnet similar to that on the track but inverted. One pole is actuated by current

from the storage battery, producing a strong magnetic field. The coil on the other end of the U is connected with the battery and the translating apparatus in such fashion as to keep pressure on the brake-lever operating cylinder. Under these conditions the brake lever is free, and may be moved to any position.

However, if this apparatus passes over the track element when "stop" conditions exist the magnetic field from the engine passes downward into the magnet on the track, inducing magnetism in the other pole of the track element, which in turn shoots up and produces a momentary magnetic flux in the other leg of the engine equipment.

This latter impulse disturbs the balance in the brake-lever operating cylinder, opens the air brakes and stops the train. On the other hand, if the circuit in the track equipment is closed these magnets will act as choke cells and prevent the magnetic flux from being transmitted from one pole of the engine element to the other.

CARUSO'S VOICE ALWAYS TO BE HEARD.

It will be consoling to all music lovers the world over to know that there probably will never come a time when the voice of the great tenor singer may not be heard. Phonograph record manufacturers announce that about two hundred different selections sung by Caruso are to be available for all future ages. The metal matrices (or "master records" as they are termed), kept with the greatest care and constantly guarded, can be used to make millions of records of the matchless Caruso voice without appreciable deterioration.

At the time Caruso died there were about thirty new records of his songs yet to be released by the manufacturers.

Caruso was singing for phonographic reproduction for nineteen years prior to his death, and his total income from this source alone is estimated to have been \$1,600,000. The royalty paid by the singer has long been ten per cent of the catalogue price of the records, and this will go to his heirs as long as his records are sold. When he died his contract with the record-making concern (Victor Talking Machine Co.), made in 1911, had still fourteen years to run.

The Soviet Economic Council has sanctioned the holding of a German industrial exhibition in Moscow during the coming summer. The Russian commercial mission in Berlin is inviting especially manufacturers of agricultural implements and machinery, and of railway material.

Canadian Trade and Finance.

Montreal, 1st July, 1922.—The influence of the business depression is still reflected in Canadian trade statistics, although favourable features are not entirely lacking. In comparison with an unfavourable balance of over twenty-two million dollars during the first quarter of last year, the figures for the same period of the present calendar year show an unfavourable balance of over thirty-three millions, as indicated in the table which follows :

	Imports	Exports (Domestic)
January ..	\$51,476,253	\$46,198,080
February ..	54,294,255	46,046,449
March ..	79,378,726	59,539,313
	<hr/> \$185,149,234	<hr/> \$151,783,842

During the fiscal year ending March 31 last, however, exports of Canadian goods almost equalled the total of imports for consumption, there being a deficit of only seven and a half million dollars. A favourable balance of almost an equal amount is shown if we consider the figures for total exports, which include the re-export of goods of foreign origin. This is a marked improvement over the corresponding period ending March 1921; during that period, Canada had an unfavourable balance of over fifty million dollars.

Trade between Canada and the United States experienced a decided drop during the last fiscal year. Imports from the United States decreased 40 per cent, while Canadian exports to the United States dropped from \$542,322,967, during the year ending March 1921, to \$293,906,643, last year; this is a decrease of \$248,416,324, or 46 per cent. The factors entering into this decline were changing price levels, the general depression in trade, and the Emergency Tariff. Trade between Canada and the United Kingdom, too, was considerably smaller than during the year ending March, 1921, but there was not nearly so great a reduction as in the case of our trade with the United States. The aggregate trade during the year was \$416,496,251, in comparison with \$526,818,433 for the year ending March, 1921. Singularly enough, Canadian exports to the United Kingdom experienced a decrease of only 4 per cent, while imports into Canada from Britain were 45 per cent less than in 1921.

An interesting feature of the year's trade is the fact that an increase in Canadian ex-

ports took place in the case of only two countries, viz., Japan and Mexico; exports to all other countries showed a decline. Japanese imports from Canada increased from \$6,414,920 to \$14,831,520, which is a high-water mark in Canadian-Japanese trade. British Columbia lumber was a very important item in this increase. Our exports to Mexico showed an increase of \$111,400 over the previous year.

PULP AND PAPER INDUSTRY.

In addition to the general slackening of demand, which normally characterizes a period of trade depression, certain branches of the pulp and paper industry were confronted with other difficulties during the year 1921. Without going too minutely into these difficulties, there is one which deserves particular emphasis, in view of recent changes in the paper market, namely, the temporary loss of business resulting partly from effective foreign competition, and partly from the depreciated condition of certain foreign currencies.

During the years 1919 and 1920, the pulp industry in some of the European countries was handicapped by labor troubles. One result of this was that buyers of newsprint in many foreign countries, seeking new sources of supplies, turned to Canada. Canadian manufacturers as a consequence began to receive from the Orient, from South America, from Europe, and from the United States, orders which formerly had gone to Scandinavia and to Germany. This was only a temporary movement, however, for during the first few months of 1921, conditions in the pulp and paper-producing countries of Europe adjusted themselves, and those countries were able once more to attract the business which temporarily had deserted them. They were assisted in this, in some cases, by the depreciated condition of their currencies; this was especially true of Germany. The influence of European competition made itself felt most keenly when poor business throughout the world was curtailing advertising, and so lessening the consumption of newsprint. Canadian mills had by this time greatly increased their productive capacity. They found, however, that demand was reduced rather than increased, and as a result were not able to employ their machinery to full advantage. This situation continued practically up to the end of 1921.

In the first half of the present year, however, certain factors have caused foreign

demand to swing back again to the Canadian manufacturer. It would appear that some European firms who had offered paper at lower prices than those quoted by the Canadian exporters have found themselves unable to fill their orders promptly, and, in extreme cases, unable to fill them at all, owing to a depleted supply in certain European countries, especially in Germany. Some of the paper that was shipped at reduced prices was said to have been of an extremely low grade. One publisher received a large order of newsprint, which he was unable to use. This state of affairs was, in general, unsatisfactory; it goes without saying that the nature of the newspaper industry demands a steady, uniform, and sure supply of paper. Such a supply, the Canadian manufacturer offers, and he is finding increasing favour with the foreign purchaser. Furthermore, in the United States, an increasingly optimistic attitude towards the future, and an actual slight improvement in present business conditions, have resulted in more advertising and an increased consumption of newsprint.

What has been said in the preceding paragraphs refers more particularly to buyers of paper, and to some extent to buyers of pulp, in the United States, but a similar situation exists also abroad. The Australian buyer is becoming more interested in Canadian pulp, and one Canadian firm recently has received orders of very considerable importance from that source. In the Argentine and Brazil, too, there are signs of a tendency to turn away from the European market, in favour of Canadian paper. That our pulp products are gaining favour in the United Kingdom is certain. In spite of the fact that the total British imports of pulp in 1921 were very much smaller than those of 1920, the amount imported from Canada in 1921 was considerably greater than that of the previous year.

Production figures of Canadian newsprint, as well as statistics of sales, show a distinct improvement over those of last year. The production for the first four months of the present year was 328,442 tons, as compared with 269,965 tons during the same period of 1921. During this period, shipments exceeded the amount produced, and most mills were operating at almost full capacity. In comparison with the Canadian increases, 31 of the large American companies reported a decrease.

The United States, of course, secures from Canadian sources the great bulk of her imports

of pulp and paper. The total imports of paper into the United States, during March, were 78,031 tons. Of this amount, Canada supplied 73,119 tons, or over 91 per cent; Germany supplied 2,080 tons; Norway 1,262 tons, and the balance was obtained from Finland. The total importations of unbleached sulphite were 12,989 tons, and of this Canada supplied 10,912. Of the total imports of groundwood pulp, amounting to 11,094 tons, Canadian producers supplied 10,428 tons. These figures depict very clearly the importance of Canadian pulp products in the United States.

BUILDING ACTIVITY AND RENTS.

The various branches of the building trades are closely dependent, as are most other branches of industrial activity, upon general business conditions. The trade depression through which we have been passing has made serious inroads upon progress in this field, as elsewhere. There is, however, one important difference; building is one of those industries in which the natural movement of the trade cycle was not greatly interfered with by the war. It is generally conceded that the down-swing of the business cycle had made its beginning just prior to the war, but that the sudden demand for goods and for services, induced by war conditions, postponed the depression in those industries which were concerned directly with the production of necessities, and with the promotion of military activities. The building trades are not included in this category, except indirectly and in a limited way.

At the end of 1912, building construction throughout Canada was at its height. In 1913, however, a decline in building took place, and this continued until about the beginning of 1916. The level which was reached at that time was maintained for nearly three years. Soon after the signing of the armistice, there was slightly increased activity in building construction, which continued until the effects of the general trade depression began to be felt in the spring of 1920. As a consequence of this long period of comparative inactivity in construction, there has been a serious shortage of buildings, more especially of dwelling-houses, throughout the country.

The stage, then, has been set for extensive building construction, but certain factors have operated to prevent the carrying out of such a programme. Chief among these were the high costs of labour and of materials. Labour costs have fallen considerably in certain districts. Taking the country as a whole,

building costs also are still tending slightly downward. The wholesale price index number of 48 building materials, according to figures compiled by the Department of Labour, stood at 253.4 in April, as against 254.3 in March. This is a very substantial decline from the figure for April 1920, which was 386.6, but it is still very much higher than the April 1913 figure, *viz.* 141.6.

During the first five months of the present year, the number of building construction contracts awarded, showed a gradual and substantial increase. The aggregate value of these contracts, during the period named, was \$96,831,600, in comparison with \$85,326,700 for the corresponding period last year. The highest monthly record since 1914, with one exception, was made in the month of May, when building contracts amounted to \$34,827,300.

A survey of building and rent statistics throughout the Dominion indicates a wide variation of conditions in the different districts. Rents, on the average, have as yet shown very little inclination to fall. In British Columbia, the housing situation is quite satisfactory. There is neither a shortage of houses, nor is there any considerable surplus. A large number of new residences have been built during the last two years. Retail merchants report that the tendency of business rents is likely to be downward in the near future. In the Middle West, construction costs are still too high to warrant building residences as an investment. Rents have declined somewhat in those centres that have been slower to recover from the depressed condition of business. In Ontario and Quebec, the larger cities report substantial building programmes, both for industrial and for residential purposes. The high cost of building, in addition to high taxes and high rates on mortgage loans, has discouraged the building of houses for rent. Those houses which are being built are for personal use or for resale to owners. Rents in this area show a tendency to decline in the larger centres. In the towns and rural districts, however, rentals remain firm, and in some cases they have shown a slight increase. In the larger cities, there is slightly more available space than was the case last year. Little change has occurred in rents in the Maritime Provinces. Building there has been greatly restricted on account of the high cost of materials and also of labour.

In general, then, rents have not yet fallen

materially, nor are there definite prospects for any substantial reduction in the immediate future. The decline in salaries and incomes, lower building costs, increased construction, and the additional space available therefrom, must, however, make for lower rentals eventually.

HYDRO-ELECTRIC DEVELOPMENT.

During the past decade or two, ever-increasing attention has been centered upon a development, which, in its enormous potentialities, promises to play a vitally important role in the development of the Dominion. This is the production of hydro-electric energy.

That this industry has been becoming more and more important in recent years, is due to various factors. The continuous rise in the price of fuel, as well as the diminishing supply, has induced a search for substitutes, and hydro-electric power has proved its value in this field. Furthermore, the growing complexity of transportation problems suggests a wider use of electric power. Another factor is the ability, due to recent technical improvements, of transmitting power of high voltage a much longer distance than formerly was possible.

With respect to the amount of hydro-electric power already developed, as well as to the potential supply, Canada stands among the foremost of the nations of the world. Nor has the Dominion been slow to realize the tremendous possibilities of this important resource. That a creditable showing was made during 1921 in the development of water power in Canada, is indicated by reports recently published by the Department of the Interior. In these reports, it is shown that, in spite of general conditions of depression throughout the country, over 300,000 horse power was added during the year 1921.

From the standpoint of the distribution of hydro-electric power in Canada, the central electric station industry is of prime importance. The fact, previously referred to, of the greatly extended radius of electrical transmission, in addition to the fortunate location of water power with relation to centres of industry, has led to the widespread development of central electric stations. It is estimated that at the present time there is invested in hydro-electric plants and systems, engaged in the production and distribution of electrical energy, over \$437,000,000. This investment represents a horse power of 2,013,000, generated in 282 central stations. Of this amount, the pulp and paper industry used over 160,000

horse power, in addition to the 476,000 horse power generated directly by the pulp and paper companies. Other industries used over 274,000 horse power.

The recent development of water power in Canada compares very favourably with that of other countries. Compare the Canadian record, with that of the United States, for example: In 1902, Canada added 47 h.p. per thousand of the population, in comparison with an addition in the United States of 26 h.p. in the same year. In 1912, the Canadian figure was 198, and the American figure 51. In 1920, the Dominion installed 200 horse power, and the United States 93 h.p. per thousand of the population.

With these important additions, the developed water-supply of Canada now totals

well over 2,763,000 h.p., with considerable construction under way. This gives Canada the distinction of having the largest per capita development of any country in the world, with the one exception of Norway. The near future should see tremendous strides in this vitally important industry. Canada is eminently fortunate in her water power resources, both in respect to amount and seasonal distribution of rainfall, and also from the standpoint of the nature, extent and location of the sources. In the past, prospective water power sources have been thoroughly investigated and intelligently administered. It is scarcely possible to exaggerate the vital importance of this industry, not only in relation to its use for light and heat, but more particularly in view of its tremendous value in the development of our other natural resources.

Cotton Experiments at Coimbatore.

Among the several items of Agricultural improvement which has been taken in hand by the Madras Agricultural Department in this district, the improvement of Cambodia cotton is one which requires special mention. It should be admitted that the quality of Cambodia cotton has been deteriorating steadily for the past so many years. Unscrupulous traders have been importing inferior Kappas from outside and have been adulterating the local cotton and passing the mixture as genuine Cambodia. This practice has caused a serious admixture of foreign with local seed and has thus ruined the quality of the local cotton.

With a view to maintain the purity of the seed the Government have organized seed farms in the Coimbatore district during the past four years. This work was initiated by Mr. H. C. Sampson (then Deputy Director of Agriculture) and has been ably organized and carried out by Mr. C. Narayana Aiyar who is now in charge of the circle.

Over 150 ryots in the typical Avanashi tract are selected, pure seed is supplied to them, and the crop is grown by them for the Department, under the personal supervision of the Departmental staff. All operations are done at the proper season, the produce picked and stored and is sold to the department by the farmer at a premium. The seed from this selected cotton is reserved for

sale to ryots. During the past season seeds sufficient to sow some 20,000 acres were stocked for distribution. That the quality of the Kappas produced from this seed is unquestionably the best is proved by the fact that, when the produce of the previous season was sold in auction, it was readily purchased at fancy prices. At present, the finances and the staff placed at the disposal of the officer concerned are not sufficient to produce seeds and distribute them to the whole district. However a scheme similar to the co-operative unions is under contemplation whereby ryots could be induced to co-operate in selling their cotton collectively and reserve the best of the seed for sale in villages. District or Taluk agricultural associations might do well to take interest in this question.

Fish canning is the greatest mass production industry in Norway; upwards of 40,000,000 lb of canned fish are exported annually, and if German competition can be met a market exists for improved packing machinery. The industry requires interior transport equipment, such as trucks and conveyors, machinery for sorting, automatic filling and measuring, can-making, capping and sealing, side and flat-labelling (with automatic or hand feed), label-pasting, package-wrapping, crating and mailing, automatic sterilizing, and washing.

New Features of the Industrial Situation in the United States.

By Virgil Jordan.

There are signs in American industry of a tendency to increased activity, but whether this tendency will be continuous during the rest of the year depends upon the way in which certain basic problems in the industrial system are met during the coming summer. The general situation is somewhat as follows:—

Agriculture, the second largest industry in the country, employing over one-fourth the wage-earners, is showing a more prosperous condition because of recent reductions in freight rates and rise in prices of farm products, as well as better credit conditions. The supply of farm labour is above normal, at lower rates than in past years. The iron and steel industry is in an excellent condition, due to greater demand from railroads and building construction. Steel production is at about seventy-five per cent of capacity; the production of sheet and plate steel as well as that of malleable castings has doubled in the past two months, while pig iron production is at about seventy-five per cent of the high peak before the war. Railroads ordered about 80,000 new freight cars in the first six months of 1922, as compared with 105,000 for the whole of the prosperous year of 1920. In hardware, farm implement and paper manufacturing decided improvement is reported, and automobile production is close to a peak. The silk and chemical industries, due to market conditions, are in a less favourable position. Wool manufacturing is going on at about sixty per cent of capacity, with wages well maintained despite price cuts of forty per cent and fifty per cent below the high points. The cotton industry is broken up by general strikes in the northern mills which have cut production by about 200 million yards. The southern mills, run with unorganized labour at lower wages, are running nearly full. Coal production has been cut down by the strike so that a great shortage and higher prices are inevitable at the end of the summer.

The situation in the coal and cotton industries emphasize the first problem that has to be solved—the problem of adjustment of wages and working hours in accordance with reasonable social standards. The textile and coal strikes are at a deadlock, and the rail-

road workers threaten to join them on the 1st of July. The cotton workers, in the fourteenth week of their strike, are still receiving the steady support of other labour organizations, store-keepers and the public in some textile centres. The chief bone of contention here is the question of working hours. An agreement could be reached on wages, but the desire of the employers to lengthen hours from forty-eight to fifty-four per week is steadily resisted. The workers and labour unions in general feel that their wartime victories in shorter hours would be irretrievably lost if any concessions were made now. The extent of this victory is indicated by the latest census figures which show that, while in 1909 only 7.9 per cent of the wage earners in the United States were working on a schedule of forty-eight hours or less, this percentage had increased to 11.8 per cent in 1914 and to 49 per cent in 1919. The eight-hour day is an issue also among the coal and railroad workers, though of less importance than wages.

With regard to wages the difficulty lies in the failure to work out an adjustment truly in accord with the changes in the cost of living, about which there is great difference of opinion and a lack of authoritative information.

The level of the cost of living in the United States in June is reported to be about fifty-five per cent above 1914, and showing a tendency to move upward again. Average wages in manufacturing industries are about sixty-five per cent above the 1914 level, but are declared by the coal and railroad workers to be inadequate for subsistence. Other studies indicate that the total share of manufactures in the national income has decreased about two per cent since 1899 and that the share in the value of products produced by industrial wage-earners has decreased since 1899 from forty-four to forty per cent, while the number of wage-earners in industry has increased. In short, the position of the industrial wage-earner, despite the rise of actual wages during the war, has very probably suffered in comparison with the salaried and agricultural classes. The problem of wage adjustments in industry is rapidly becoming one of the first importance, requiring more

thorough study than has been given it so far.

This problem, in its present bearing on industrial revival, is being further complicated by the problem of labour supply. There is clear evidence of a shortage of some classes of labour, and a dislocation of the labour supply in the United States, in which the restriction of immigration and the decline in working hours mentioned above play a large part, and which may be a determining factor in the course of industrial activity in the coming few years.

Labour shortages are reported in the mining districts of Colorado and Arizona, in the oil-producing sections of Oklahoma and in the industrial and mining states around the Great Lakes, as well as in the northern coast states. The demand is becoming marked with regard to common labour, and has led to a growing number of wage increases by employers in some sections in an effort to draw workers away from other plants. The number of wage increases reported to June 15th was about twice the number of decreases. Industrialists are becoming anxious lest the shortage and the competitive bidding for workers may lead to a general pyramiding of wages again and offset the reductions which the industrial depression of last year made possible. Apparently the employers' organized resistance to union control developed in the past year and a half has been of little effect in face of this problem of labour supply, and the unions see in the shortage hope of a return to power.

In consequence, both employers and unions are taking the keenest interest in the immigration situation. The former have begun an attack on the restriction law and the latter in their annual convention have upheld it despite a protest on the part of the Jewish unions. During the past year almost as many immigrants of those nationalities that supply the common labour of American industry—Italians, Poles, etc.—left the country as entered, while the Jewish immigrants, who do not figure largely in the mechanical industries of the country, the quota was filled, many were excluded and few left the United States. As a result the net increase of labour from immigration during the first year of the new law is probably less than 70,000 as compared with 300,000 or more in former years.

These problems of lowered working hours, wage adjustment, labour supply and the balance between manufacturing industries and agriculture are obstacles that make the path to industrial recovery less smooth than it seems,

and little sound progress can be looked for until an approach is made to their full understanding.

MILLION DOLLAR GIFTS FOR GREAT MUSEUMS.

This is the season for magnificent gifts to the two great museums in New York City—the Metropolitan Museum of Art and the American Museum of Natural History. A few weeks ago the Metropolitan received an unrestricted gift of \$1,000,000 from a New York millionaire, and now the Museum of Natural History announces the receipt of \$1,000,000 from John D. Rockefeller, and of \$250,000 from another millionaire New Yorker. Both gifts were unrestricted.

The income from the gifts may be used to extend the direct educational work of the museum or its research expeditions which have been sent to many parts of the globe, the most important of these at present being the party which, with the help of seventy-five camels and five specially constructed automobiles, is penetrating the great Mongolian desert, a tract which is almost virgin soil for the archæologist and palæontologist. The purpose of the Mongolian expedition which started last April with a great staff of scientists, with camels, automobiles and air-planes, is to explore from every scientific point of view that part of the world which is believed by many scientists to have been the original home of the human race. Many important discoveries have already been reported by the expedition.

A PROMISE OF HOUSING RELIEF.

An important and promising result of the investigation of the housing shortage in New York City, undertaken two years ago by a legislative committee whose work is not yet ended, is the recent announcement of a housing project designed to accommodate 1,950 families at a cost of \$9 a room. The plan, which is put forth by the Metropolitan Life Insurance Company, was framed in accordance with an amendment to the New York State insurance law passed by the Legislature at the request of the committee, which permits life insurance companies to invest ten per cent of their assets in housing. The insurance company's first outlay will be around \$6,500,000, to be spent in the construction of four blocks of apartments, all within a five cents' ride of the centre of the City. There will be fifty houses of thirty-nine apartments each, providing for a total of 1,950 families in 8,250 rooms.

The apartments are to rent on the basis of

not more than \$9 a room and are equipped with all the modern improvements found in expensive apartments.

They are to be built on fifty per cent of the lots. Every room is to be an outside room opening on street, yard or interior garden, and there will be cross ventilation in each apartment and separate staircases for each eight families. The play yards in the rear will run the entire length of the street and will be landscaped into gardens. Each building will be isolated, with interior garden, rear court and side passageways. An interesting novelty in each apartment will be a little room off the kitchen, fitted with table and benches, which will be used for the serving of meals, leaving the living room free for other uses.

It is hoped that the Metropolitan's plan will induce other speculative builders to erect low rent houses.

"ROPE OF TAILS" TESTIFIES TO WORK AGAINST RODENTS.

A rope made of 3,000 gopher (ground squirrel) tails, recently shipped to the Biological Survey of the United States Department of Agriculture from the north-western state of Montana testifies to work against these rodents in that part of the country. The rope was made by the Blackfoot Indian Chief, Split-Ear, and his tribal assistants. The Indians have taken an active interest in the campaign against the rodents, and after hurrying more than 1,400 ground squirrels, decided to save tails for the nineteen-foot rope now on exhibition. It is estimated that at least 15,000 rodents were destroyed by the Indians during the drive.

MORE FEDERAL AID FOR ROAD-BUILDING.

Federal aid for road construction will be continued as a result of the authorization of additional appropriations for this work amounting to \$190,000,000 carried by the Post Office appropriation bill signed by the President, June 19. Fifty million dollars is authorized for the fiscal year beginning July 1, this year, and \$65,000,000 and \$75,000,000, respectively, are authorized for each of the two succeeding fiscal years. In addition, \$6,500,000 is authorized for forest roads for each of the two fiscal years beginning July 1, 1923, and July 1, 1924. The funds will be administered by the Secretary of Agriculture through the Bureau of Public Roads, and must be matched by the forty-eight states among which they are apportioned.

What the new funds will mean to the country

can be judged by the use that has been made of the \$350,000,000 previously appropriated. On May 31, 17,000 miles of road had been completed, and, in addition, nearly 14,500 miles were under construction. Federal-aid roads in all stages total nearly 38,700 miles, involving over \$287,500,000 of Federal aid. To match this fund, the States have appropriated approximately \$380,000,000, making a total of \$667,500,000.

All types of road have been constructed with Federal aid to meet the varying conditions in the United States. The average cost per mile has been \$17,120, and Federal aid has amounted to forty-three per cent of the total cost.

It is estimated that the \$190,000,000 lately authorized will result in the construction of more than 25,000 miles, which, added to the 46,000 miles that is expected to result from previous appropriations, makes a total of 71,000 miles, or nearly forty per cent of the estimated 180,000 miles of road in the system of Federal aid roads now being outlined.

COST OF LIVING GOING UP.

Figures compiled by the Bureau of Labour Statistics of the Department of Labour indicate that the cost of living continues to rise. In all groups of commodities, except chemicals and drugs, the level of wholesale prices in May averaged higher than those in April. Farm products, food, clothing, fuel and lighting, metal products, building materials and most commodities reached higher price levels in May than during the previous months and in a number of groups the prices were higher than during the corresponding month in 1921.

The department endeavours to show the relative difference between wholesale prices from month to month by a series of "index" numbers. These are being continually revised to show the fluctuating changes in price levels. The revised index numbers for the several commodity groups for May, 1921, as compared with those for April and May, 1922, are as follows:—

	May 1921	April 1922	May 1922
Farm products ..	118	129	132
Foods ..	138	137	138
Clothes and clothing ..	173	171	175
Fuel and lighting ..	200	194	216
Metals and metal products	138	113	119
Building materials ..	165	156	160
Chemicals and drugs ..	134	124	122
House furnishing goods ..	209	175	176
Miscellaneous ..	128	126	116
All commodities ..	145	143	148



Views and Comments.

'BY ECONOMICUS'.



In connection with Indian Railways, Earl Winterton stated recently in the Commons that since March 1st, Sir William Meyer had placed orders in respect of Indian State Railway requirements as follows :—Great Britain £355,500 ; Germany, £15,100 ; Belgium, £4,100 ; America, £20,700 ; Sweden, £18,200. Where is India ? Echo answers where.

* * *

In the recent Indian Debate in the House of Commons, Earl Winterton compared the urgency of Irrigation and Railways thus :—“The position with regard to Irrigation is, that the full extent to which money can be supplied for public purposes in India is limited at the present time and the question is where the money available for the Government of India to spend on public works can best be spent. I have no doubt it can best be spent at the present time on the development of the Railway system. It is a supreme and urgent question in connection with the development of India at present.” It is no wonder that responsible British statesmen look at the problem of Indian development from the point of view of improved and rapid communications, for these help the British mercantile classes whose views and opinions get natural precedence over every other. We have pointed out in these columns the inadequacy of this policy, and shall present to our readers what the late Mr. Gokhale said in one of his Budget speeches :—“The English mercantile classes have been conciliated by the Government undertaking construction of railways on a large scale.....a policy which, whatever its advantages, has helped to destroy more and more the few struggling non-agricultural industries that the country possessed and throw a steadily increasing number on the single precarious resource of agriculture. And this railway expansion has gone on while irrigation, in which the country is deeply interested, has been neglected.” It is to be regretted that the *Indian* point of view never strikes our rulers as just or necessary.

A Lyons firm is erecting silk works near Menchhofen, in Lower Alsace.

On this typical British attitude, it is instructive to peruse a recent article by a Special Correspondent of the *London Times*. Writing on the subject of Empire Preference, he holds that “the scheme will develop Britain’s secure markets in the Empire,” and says :—“The more we depend upon them for our supplies of raw materials, the greater will be their ability to buy our manufactures ; and when, as does come in the life of a Dominion, the demand enforces the creation of local industries we will be fully in touch with the whole situation and able to see that these industries are British in origin.” The policy outlined above is full of ominous consequences to India and her well-wishers have to be wide awake to make sure that Indian industries are not sacrificed in helping the industry and trade of Great Britain.

* * *

A recent communique issued by the Industries Department states :—“In order that the applicants domiciled in India might be considered for the posts of Assistant Superintendents of Geological Survey of India, the Government recently instituted a scheme whereby suitable applicants in this country can be examined by a Selection Committee and their names and qualifications sent to the Secretary of State for consideration along with the names of candidates for the United Kingdom. The Selection Committee for this year’s appointments met in April but were unable to recommend any of the applicants to the Secretary of State, the standards of their qualifications not being satisfactory.” This is taking away with the other hand what is given by the one. If suitable candidates are not available, does the Government realize that it has not made any provision for the training of such ? It is a pity that Indians are rejected as unfit for the service of their country on one pretext or other.

The revenues of Italian Railways from July 1, 1921, to February 28, 1922, totalled 1,812,401,804 lire, an increase of 16,209,466 lire on the corresponding period of the financial year 1920-21.

There is every indication that the scheme of Imperial Preference is gaining ground in Britain. In reply to a recent debate on Imperial Preference in the House of Commons, Sir Robert Horne, while favouring the idea on political and sentimental grounds, gave expression to the following:—"The way in which the United States of America was building up an increasing trade on the basis of preference to its own people was becoming a very serious menace to British industry." Thus the British people and responsible statesmen are giving every consideration to the influence of the commercial policies of other nations on their own, while, in India, such strong views are conspicuous by their absence. There is little doubt that Britain hopes, by working out Imperial Preference, to strengthen her trade position in the world.

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It is not sufficiently realized in India the enormous economic and human loss that India sustains on account of the recent announcement regarding the extension of time limit, for an indefinite period, for the Indian Civil Servants to retire on proportionate pensions. Human nature being what it is, in spite of their solicitude for the welfare of this country, British members of the Service are most likely to succumb to the temptation that, when their pensions are thought sufficient for their purpose or when an alternative employment elsewhere is secured at any time of their Service, they can retire with a sufficient supplementary income. The evil is cumulative and it is a pity that, in the name of Reforms, such a financial injustice is perpetrated. More than that, it is suicidal to permit the Civil Servants to have their legs on two boats, instead of asking them to give the best of their life to the service of our country. When this announcement was made in the Lords, Lord Sydenham congratulated the Secretary of State and he was "sure that it will have considerable effect in making members of the Services in India to reconsider their decision" (of resigning before the prescribed date). His Lordship is very shrewd and sees at a glance that the Civil Service will be materially benefited, though India loses to the same extent.

Ceylon importers state that good German drugs are to-day available at from 1-10 to $\frac{1}{2}$ the cost of British drugs, and large quantities of the German article are now being imported by Indian speculators.

In the course of his speech, supporting the resolution favouring the coming Empire Exhibition to be held in London, at a recent meeting in Madras presided over by H. E. the Governor, Mr. C. R. Reddy answered some of the objections. In answering the first objection that raw materials are sent out of the country, he would reply, "that pending the building up of Indian manufacture and industries it would be foolish not to try and get the best value for the raw materials." We may point out that some of our public men seem to hold exaggerated notions about the prosperity created by our present foreign trade and are not aware that the self-same forces that enable the few to get the best value for the raw materials and foodstuffs retard our industrial growth and lead to the increasing poverty of the poor. Secondly, Mr. Reddy held that "the prosperity of rural industry could be considerably enhanced by visiting the Exhibition in London and by introducing some of the cottage industries of Ireland and Denmark." We are afraid that there will not be many among us to travel all the way to London to learn such methods. We think that the outcome of this Exhibition in London will be, if anything, the growth of Imperial trade rather than proper development of Indian Industries; it is useful to remember that the other parts of the Empire require India's raw materials and foodstuffs and not her industries. ————

By placing at the disposal of the workers in brass and silver, the illustrations in Mr. Cumaraswamy's "Mediaeval Sinhalese Art," and those in Mr. Bell's Archæological Reports, by instructing the men to evolve new designs and articles, and by offering prizes for the best article of each kind turned out every month, the Kandyan Art Association is obtaining a large quantity of articles well up to standard. The association has also initiated ivory statuette carving and fine Kandyan embroidery work, both of which were fast dying out, the first for want of material, and the second for want of patronage. The ivory is now obtained by the Association for the workers, and a fair demand has already been created for the embroidery. The Association is now endeavouring to establish a special depot at Colombo in conjunction with the Kalutara Basket Association, to capture some of the tourist trade. There is some demand for its products in London, and the association is now trying to establish connexions with the important cities of the world.

Economic Notes.

INDUSTRIAL, AGRICULTURAL, EDUCATIONAL AND GENERAL.

According to the Oil, Paint and Drug Reporter, January 16, 1922, wax is obtained from sugarcane, which contains about 1 per cent of this wax, found principally in the rind. In the sugar-refining process this wax is removed in the filter cakes, the latter containing 10 per cent of this substance. It is possible to extract the wax by means of benzine, and there are certain isolated plants which are today carrying out this process. The crude wax is hard and brown, but when purified the product resembles carnauba wax closely, and can be used to good advantage as a substitute therefor.

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After extensive and thorough experimentation blotting paper of the finest quality is now for the first time being produced in Canada, the Howard Smith Paper Mills, Limited, of Beauharnois and Crabtree Mills, Quebec, and Cornwall, Ont., being the pioneers of this branch of the industry. Hitherto all the blotting paper used in Canada has been imported, the imports being valued at about half a million dollars a year. The success achieved in producing blotting paper in Canada leads to the belief that not only will this country now be self-supporting but will soon be in contest in the world's markets for this, as for many other grades of paper.

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The *Madras Mail* writes that the Ministry for Education is making most encouraging progress with the movement for the introduction of vocational training as part of the general education in secondary schools. Before the end of the official year the pending schemes are expected to have absorbed the Budget allotment of one and a half lakhs of rupees and he will have come up with a demand for supplementary grants. Mr. Porrett, the expert in Technical Education Teachers' College at Saidapet who had been on special duty in connection with the preparation of the scheme of general vocational education having drawn up a scheme and syllabuses for practical training has gone to England for training and for studying the further details of the system of vocational education in vogue in Great Britain.

The Temiskaming Pulp & Paper Co., of which Alex. Fasken, K.C., Toronto, is president, and J.H. Black, Toronto, manager, are making good progress in the erection of their ground-wood pulp mill at Dixon Creek, near Haileybury, Ont. This building is 270 feet long by 60 feet wide, the superstructure being of concrete and steel, with interlocking tile brick wall and gypsum slate roof, covered with Barrett roofing specifications. The output of the plant will be 40 tons a day, and it is expected that the plant will be in operation early in the spring. Part of the equipment has been ordered, and it is understood that magazine grinders will be installed. The mill will be one of the most up-to-date in Canada and is assured of a pulpwood supply for many years to come.

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A company is reported to be under organization at Calgary, Canada, to establish and operate a tannery using the French vacuum or Nance process. It is stated that the promoters expect shortly to have the necessary capital to begin operations. They claim to have the rights for the process in Canada, and have selected Calgary as the point of manufacture for that portion of Canada, west of the Great Lakes. The Nance process of tanning was invented by an Australian named Nance, and was patented in England ten years ago. A few years ago to tan under this process is said to have required fifteen days, since which time it has been discovered that by taking all the oxygen out of the tanning matter it is possible to turn out the product in six days. The labour required under the process is claimed to be only about 10 per cent of that under the old method. The process consists of hermetically sealed tanks in which a vacuum is created, after which the tanning material is allowed to run in. Being under vacuum and without oxygen, it boils or is agitated like rapidly boiling water, under which condition the hide absorbs it. All the pores being open, the tanning material at once spreads throughout the mass, performs its function rapidly with no more damage to the material than under the old, slow process, and, it is claimed, with less damage to the texture.—*Chemical Age.*

The attention of factory owners is invited to section 18 of Act II of 1922 amending the Indian Factories Act of 1911. This section gives power to the Local Government to exempt certain classes of work in factories and certain classes of factories from the provisions of the law regarding the daily period of rest, the weekly holiday, the sixty-hour week, and the eleven-hour day. Under the Old Act (of 1911) certain industries and classes of work which were specified in the schedule appended to the Act were exempted from the provisions regarding the daily stoppage of work, the weekly holiday and the limitation of the hours of work. In consequence of the amendment or repeal of the sections of that Act (of 1911) relating to these provisions, the schedules of exemptions are no longer in force. Occupiers or managers of factories desirous of claiming exemption for all or any section of their employees from any of the provisions of the amended sections 21 (rest interval), 22 (weekly holiday), 27 (sixty-hour week), or 28 (eleven-hour day) should forward their applications to the Commissioner of Labour, Victoria Buildings, Egmore, Madras, on or before the 25th September 1922 with a statement showing clearly the nature of exemptions required and the grounds on which they are claimed.

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The Imperial Institute Advisory Committee on Timbers is conducting an enquiry into the possibility of extending the use in Great Britain of the timbers produced in the various countries of the Overseas Empire. A number of reports have been furnished to the Governments concerned, some of which have been published from time to time in the *Bulletin of the Imperial Institute*. The current number contains reports on certain timbers from British Columbia, and the Eastern Provinces of Canada. The attention of H. M. Office of Works was called by the Committee to the value of British Columbia Douglas fir, spruce and hemlock for constructional purposes, and it is now reported that as a result of special strength tests and joinery trials these woods are now included in their official specifications for Government buildings as alternatives to European goods. The Eastern Canadian timbers dealt with comprise soft woods, such as spruce, red pine and yellow or white pine, and hard woods, including white birch, rock maple, beech and white elm. The Committee consider that the technical qualities of Eastern Canadian timbers are such as to warrant a far larger use of the woods in this country than obtains

at present. In particular spruce and red pine should find a good market, since they form admirable substitutes for Baltic white and red deal respectively. Yellow or white pine is already well known but should also be more extensively used. H. M. Office of Works will permit the use of these Eastern Canadian timbers by contractors for Government buildings if the woods conform to the official standards of quality. It is also understood that the three soft woods mentioned have been accepted by the War Office as alternatives to European soft woods.

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Nothing has been heard for some time past with regard to the prospects of construction of the Channel Tunnel being sanctioned, but the advocates of the scheme are determined to press the subject on the attention of the British and French Governments. With this object arrangements have been made for a meeting of British and French interests in London this month. The arguments in favour of the construction of the tunnel are now familiar, and they have not lost force with the lapse of time. The development of aircraft, which has to some extent at least made Great Britain a part of the Continent of Europe, has, indeed, removed one of the great objections against linking England with the Continent by means of a railway tunnel. From the engineering standpoint the construction of a tunnel beneath the Straits of Dover presents no difficulties which cannot be foreseen and provided for. On the operating side experience with electric traction for the passage of trains through the tunnels piercing the Alps shows that there would be no difficulty in hauling trains through the Channel Tunnel by this method, thus simplifying the problem of ventilation, which is one of the most difficult in the working of long tunnels. From the traffic standpoint—assuming the rolling stock difficulty to have been overcome—the advantages of being able to run through passenger and goods trains from London, and, indeed, from other parts of Great Britain, to Continental destinations, is generally acknowledged, and would do much under normal conditions to stimulate trade between Great Britain and Continental countries. The main objection to the scheme at the present time is the magnitude of the expenditure involved, but this would in any event be spread over a number of years, and would, to the extent of 50 per cent, be provided by French interests.

The Government of Luxembourg has decided to instal electricity for lighting and traction purposes and for local industries. A concession is to be granted for 30 years to one or more firms. The period for making tenders has not yet expired, and already 15 concerns have made proposals to the technical board which has been deputed to consider them.

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At a cost of slightly over £6,000, the Government of Jamaica has during the past five years established a sisal plantation upon 1,100 acres of Crown lands in the colony. A factory for the preparation of the fibre has been erected on the plantation; and efforts are being made by the Government to get landowners in close proximity to the factory to cultivate sisal and sell leaves to the Board in charge of the enterprise on a co-operative basis. If sisal is worth £30 per ton, the price of leaves at the factory will be £12 per ton, in addition to a bonus representing half-profits at the end of the season. It is anticipated that during the financial year 1922-23 a crop of 200 tons of fibre will be harvested, while in 1924-25 the plantations should meet the capacity of the factory with an annual output of 500 tons of fibre. The capital expenditure for the factory and its appurtenances is put down at £27,000.

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The Agricultural census of the Kenya Colony for the year ended June 30, 1921, shows that within the twelve months the area under coffee increased by no less than six thousand acres, there being now 9,782 acres of mature coffee six or more years old, 10,349 acres in bearing between three and six years old, and 13,682 acres under young plants from one to three years of age. Yields of Kenya coffee are estimated at 6.66 cwt. for mature, 2.86 cwt. for three to six years old coffee, and half-a-hundredweight per acre for young plantations upto three years so that on the basis of these figures the total acreages above mentioned were expected to produce 101,587 cwt. During the period under review, however, it was decided henceforth to draw a statistical distinction between clean coffee and "buni" or native coffee, and the actual yields are returned at 89,889 cwt. of clean and 6,458 cwt. of buni, thus showing that the harvests were some 260 tons short of the estimates. Native coffee, mainly from Uganda and the Bukoba district of Lake Victoria, finds a market at Aden, and it is hoped to find a new outlet in Egypt for some 2,000 tons annually. While in 1920 15.8 per cent of the land under cultivation by Euro-

peans was devoted to coffee, the percentage had risen to 16.3 in the following year. It is one of the few commodities of East Africa that still shows a satisfactory return to the grower.

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The production of pig iron in Canada during December declined to the lowest level for the year, the total pig iron made amounting to only 39,917 long tons, all of which was made in blast furnaces. By kinds of iron produced the outputs for December were as follows:—basic, 30,698 tons, foundry, 2,948 tons; and malleable, 6,271 tons. Practically, all the basic iron was made by the operators for their own further use, only 516 tons being made for direct sale. Foundry iron while showing a considerable decrease from the amount produced in November was for the most part made for direct sale, a total of 2,882 tons having been credited to this item during the month. For the first month since August a production of malleable iron was recorded and a total of 6,271 tons was produced for sale. Ferro-alloys declined from 1,683 tons in November to 846 tons in December, the entire output consisting of the several grades of ferro-silicon. Two furnaces of the Algoma Steel Corporation which were in blast at the beginning of the month were closed down before the end of the month. The Dominion Steel Corporation also which had two furnaces in blast on December 1st, finished up the year with only one furnace working. There were therefore only two furnaces active on December 31st, one operated by the Steel Company of Canada at Hamilton and one by the Dominion Steel Corporation at Sydney. Throughout the greater part of the year at least five furnaces were active, December being the only month in which fewer than five were in blast. The average monthly output of pig iron in Canada during the twelve months ending December was 50,000 tons, or less than the average monthly record of any year since 1908. Throughout the entire period during which a total of 595,000 long tons of pig iron was made, the market was decidedly quiet and the suspension of interest in iron was general. In the United States as in Canada the final week of 1921 was characterized by a quiet market and declining production. In spite of this there was evidence at the close of the year that there would be an early resumption of activities in the iron trade and the opinion was generally expressed that the first month of the new year would see the beginning of an upward movement in production.

The systematic impetus which is being given to the production of cotton in Queensland is likely to lead to a much more extensive cultivation. There is no reason why parts of Western Australia, New South Wales, and some of the River Murray country should not be suitable. The Federal Government is displaying a desire to co-operate with the interested States, and it is hoped that Great Britain, either directly through the Imperial Government or indirectly through the Empire Cotton Association, will be ready to assist.

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At the last council meeting of the Coffee Planters' Union of the Kenya Colony it was announced that, in the endeavour to save time and charges, it was hoped to be able to run special coffee trains from Nairobi to the coast, so that coffee for shipment would go direct from the rail to the ship. If the principle be approved by the railway administration, it will be necessary for further godown accommodation to be provided at Nairobi, so that some delay in the accomplishment of the plan on a large scale is inevitable. Meanwhile, certain reliable firms at Kilindini have reduced their charges for coast handling to 14s. per ton. An encouraging testimony to the good quality and consistency of the coffee marketed by the best Kenya planters is the fact that a number of London buyers have instructed their East Coast representatives to purchase on the spot supplies bearing specified estate and shipping marks. The Planters' Union is at once following this up by compiling a full list of the estate and shipping marks of each member. This should facilitate purchases on the spot by London users.

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The attention of the Indian Government was recently drawn to the condition of the lac industry, and as a result recommendations have been made to the Government by a committee of experts to improve the collection, manufacture, and shipment of lac, special regard being paid to British customers. "Lac" (comprising gum, resin, and lac) is a growing item in India's export trade. India exported nearly Rs. 3 crores' worth of commercial lac in the last fiscal year, the bulk of consignments going to the United States. The forest wealth of India, chiefly of Bengal, whence it is derived, is large enough to support a large trade. The committee made the following recommendations:—(1) That the method of leasing concessions to collect lac should be improved and systematized, after inquiry; longer periods of leases and a sliding scale of royalties are

proposed. (2) That greater attention be paid to improved methods of cultivation and collection of lac, and an advisory and supervisory agency should be constituted. (3) That one or two large scale Government factories be started, to put the manufacture on a thoroughly efficient basis and safeguard the interests of India and the Empire; lac-ware manufacturers to be encouraged in India. (4) That definite marks and grades be established, in consultation with the Imperial Institute, London, to ensure the maintenance of standards of purity and quality. (5) That the system of trading be simplified, and more direct relations established between the Indian producer and the British user.

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The Hamilton Tar Products Company, Limited, successors to the Hamilton Tar and Ammonia Company, Limited, have experienced a gratifying extension of business which necessitates the enlargement of their manufacturing facilities. For a number of years they have operated a factory in Hamilton in which they manufacture pitch, tarred roofing felts, building paper, plain and tarred, creosote oil, naphthalene, metal paints, fly oils and disinfectants. Their business in these products in Montreal, Quebec and the Maritime Provinces has developed to such an extent that it was necessary to increase their present plant or build a new one. Keen competition and high freight rates have brought about the adoption of the latter alternative and accordingly they have purchased several acres of land in Ottawa on the eastern part of Lees Avenue. On this property they are now erecting a modern coal tar still for producing pitch, creosote oil, naphthalene and other by-products of the distillation of tar. In conjunction with this tar still are a number of large steel storage tanks for holding the crude tar and their finished product. Besides the tar still the company are putting up a mill to manufacture tarred felts and building papers. This building will be of brick construction, 80 x 160 feet. The plant is located on the G. T. R. and a siding has been extended into the property. It is hoped to have a portion of the new factory in operation by the middle of March and the balance about six weeks later. At present about forty men are engaged in laying foundations, sewers, water mains, etc. Though present business conditions are not generally too bright the company feel that now is the time to get ready for the good times which are bound to come before long.

The Government of Jamaica is considering a scheme whereby plantation owners will be induced to insure their crops against disasters like hurricane. The Colonial Government is in communication with insurance companies in England on the subject.

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Talking of sugar reminds us that we recently had the pleasure of a visit from Mr. Noel Deerr, home on leave from India. It seems that he has now joined the big sugar-mill controlling firm of Messrs. Begg, Dunlop & Co. We imagine that both sides will benefit considerably over such a combination, to say nothing of India, who is exceedingly fortunate in being able to retain such an authority on sugar in her midst.

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That motorless aeroplanes are not a commercial proposition at present in the opinion of Messrs. Handley Page, who were interviewed recently with regard to the German student Hentzen remaining in the air over two hours in a motorless glider at Gresfold in the Rhone Region, Central Germany. Messrs. Handley Page, who presented the gliding competition there last year, said that the competitors started from a hill 3,000 feet high when the wind was blowing in the right direction against the hills. It was a very strong upward current which made searing possible. The craft was carried up the hill and shot the air by means of a kind of an elastic catapult. It was necessary to select suitable conditions; the rest was merely a matter of courage and nerves. Hentzen's machine weighs about 150 lbs. and has a wind surface of about 200 square feet. Hentzen himself weighs about 150 lbs. so the total weight to be kept in the air is only 300 lbs. The Air Ministry is taking considerable interest in motorless flying. General Sir Brancker, Controller of Civil Aviation, visited Clermontferrand a few days ago to watch the tests there.

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Lt.-Col. Ross, Sanitary Commissioner, Bihar and Orissa, interviewed with regard to the abnormal turbidity of Ganges water during the rains said that the fact drew his attention so far back as 1917 when he in conjunction with Dr. N. K. Bagchi began his investigation the result of which was published in the "Indian Journal of Medical Research" in 1919. The fact admitted of a very simple explanation. River waters were presumed to be alkaline throughout the year but they became acid

in reaction in the monsoons upsetting completely the calculation of the quantity of alum necessary for sedimentation. After having daily carried on an experiment with the water of the Ganges for twenty-one months he found that the change began in April before commencement of the rains and reached a maximum in August, the acidity sometimes rising above 20 parts in 100,000. The acidity was due to presence of free CO₂ in the water. He also found by experiment that addition of lime restored the condition necessary for good sedimentation. He expressed the opinion that river waters should either be settled in a series of large settling tanks if space is available or must be treated with lime in order to prepare them for final purification with alum preparation. Further investigation into the cause of the variation of alkalinity has been carried on and the results will be shortly published.

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An American labour union, which has among its members a considerable number of men and women of Russian origin, has formed a corporation with a capital of \$1,000,000 to aid in the reconstruction of Russia. The union is the Amalgamated Clothing Workers of America, and the new corporation is to be called the Russian-American Industrial Corporation. Under an agreement signed by Lenin, the company has a concession of six clothing factories in Petrograd and three in Moscow. These it will manage in conjunction with the Supreme Council of National Economy of the Soviet Government, each side to have the same number of votes. Shares of stock in the corporation will be sold at \$10 apiece. The proceeds will be spent on equipment and supplies. Care will be taken to ensure that no group of shareholders gets control of the stock. There is no intention on the part of the clothing workers' union of introducing American labour into the Russian factories, which already employ about 7,000 workers; the plan is rather to send over a staff of highly trained experts familiar with the most modern clothing production methods, and let them reorganize the existing systems of manufacturing. To make certain that there will be plenty of work for the factories, the Russian Government is arranging to place orders with them for clothing for civil servants and workers. While the corporation in the beginning will confine its activities to clothing, and perhaps textile manufacturing, it is hoped eventually to extend the field to other industries.

The Nizam's Government announces a concession to Sir Fazulbhoy Currimbhoy for the establishment of four cotton mills in Hyderabad State. It is understood Sir Fazulbhoy is also discussing the question of the cotton-growing potentialities of State and the development of the mineral resources.

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A new automatic shuttleless loom, which its inventor, an Englishman, claims, will revolutionize the cotton industry, is said to be about to appear on the market. The new loom is claimed nearly to double the production of existing looms, to weave fabric of much better appearance, to reduce waste, and, with the attachment of a simple colour mechanism, to enable six or ten different colours to be put in by the same plain loom.

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The correspondent of the *Englishman* wiring from London recently says that Lord Inchcape in a letter to the *Times* says that business men do not want the Government to embark upon trading enterprise for the development of "trade within the Empire." Business men have had enough of Government trading to satisfy them for fifty years. No Imperial Economic Conference is capable of doing the slightest good to trade. British and the Dominions trade is world-wide and its ramifications are boundless. It cannot be interfered with in one direction without upsetting results in another. The greatest service the Government can bestow upon trade is to leave it alone and to tax profits only in such a measure as will sufficiently help to meet an expenditure of which economy should be the keynote.

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Mr. Perceval delivered on the night of 21st August the second lecture of the series of lectures on technical subjects with special reference to local industries in the hall of the Northern Town Institute. Mr. R. Mather, Metallurgical Inspector to the Government of India presided and there was a large gathering. Mr. Perceval dealt with the Tata Iron and Steel Co.'s mineral deposits. He described the location of the Tata's Iron ore properties—especially the very rich deposits at Jamda, and computed the reserves of iron ore in the Singbhum District and in the neighbouring States of Mayurbhanj and Keonjhar as being in the neighbourhood of four thousand million tons. He compared the quality of Indian iron ores with ores of other countries and said that the minimum working percentage of iron

in Indian ores was 57—in English ore it was sometimes as low as 17. The lecture was illustrated throughout with lantern slides. Mr. Perceval will deal with the question of coal supplies in his next lecture.

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We have had the spectacle of every officer doing some sort of technical work calling himself an expert. In the *Modern Review* for September, Sir J. C. Bose, the world-renowned scientist, writes a remarkable article on "The Menace of the Hyacinth." He says that, without patient and laborious investigation into the problem of how to root out this menace, Governments in India and elsewhere have been wasting large sums of public money on the advice of so-called experts. Sir J. C. Bose has investigated into this question and has arrived at certain important conclusions and those interested in the subject may peruse the above article for detailed information. After pointing out that there is "absolutely no sense in the demand for employment of costly generators" as recommended by the experts, Sir Bose says: "This is but a parable of the enormous waste of public money in the exploitation of the sensational science which goes on from one extravagance to another in the false hope of something being discovered by chance."

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Yet another country is joining the movement towards the more effective organization of State aid in foreign trade. Our readers are well aware of what is being done in this direction in the United States, France, Belgium, Japan, and many other countries. Brazil may now be numbered amongst the nations which desire to see official and unofficial commercial bodies co-ordinating their efforts in the extension of overseas business. *Wileman's Brazilian Review* gives an interesting account of an important meeting of the Commercial Association of Rio de Janeiro at which Dr. Campos, Director of the Commercial and Consular Department of Brazil's Foreign Office, was the chief speaker. He favoured the immediate establishment of a Ministry of Commerce by the incorporation of various State departments and sub-departments under one control. Dr. Campos spoke in highly complimentary terms of the British Department of Overseas Trade, on which, in his view, the Brazilian Ministry should be modelled. He also advocated that Brazilian youths should go abroad to be instructed in the world's great commercial centres,

Every year vast quantities of cotton stocks are burnt up in all countries. But the stalks form a promising material for paper-making, and they might be used as well for obtaining acetic acid, tar and charcoal by a process of dry distillation.

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American pencil makers are in fear of a "famine" of red cedar wood, the best wood for pencils, and they predict that before very long, the only source of supply equal to the demand will be Kenya Colony, formerly German East Africa, where there are dense forests of red cedar, the largest in the world. If the freights were low enough, they say, there would soon be a demand for Kenya Cedar. But with water power Kenya might make the pencils on the spot.

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Mr. N. M. Joshi, M.L.A., has sent in notice of about half a dozen resolutions for the September sessions of the Assembly on subjects affecting labour and third class passengers. One resolution recommends the constitution of a joint board with fair representation of the employers and the employees which may enable organizations of the railway employees and the employees of other Government industrial undertakings to claim proper consideration of their demands at the hands of the Board.

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Lord Leverhulme writes a remarkable article in *Westminster Gazette* from which the following are extracts:—The United States holds to-day, in the coffers of her bankers, more than three-fourths of the world's gold, and this fact alarms us; but really that fact is not our danger for the future, but that American habits of early rising, hard work, and abstinence from alcohol are superior to our own. These habits are their real gold reserve. America has got, in a supreme degree, the habit of work—that great and good habit which is the foundation of prosperity and happiness, national and individual. In Great Britain, if a young man has 'expectations' of inherited wealth, he not only does not apply himself to acquire the habit of work, but he will never be given the chance to acquire it by parents or college masters. We have often seen in the United Kingdom most promising young men absolutely spoiled by a small inheritance of a mere £1,000 a year. One could instance any number of American young men to whom prospects of inherited wealth, running into incomes of one or more millions of dollars a

year, have not blunted their desire for the habit of work.

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Addressing a Convocation of the Bombay University, Sir Chimanlal Setalvad, Vice-Chancellor, after referring to the manifold activities of the University in spreading knowledge and culture, in building up national character and, above all, in kindling the fire of patriotism during the course of the last fifty years, pointed out the beneficial aspects of the higher education and said Universities could render inestimable service to a representative Government by producing men of wide outlook and liberal ideas who could rise above passion and prejudice and could lead the masses to right path. Proceeding the speaker averred that the State must help the Universities freely and liberally and suggested the benefits of University education should not be confined to students within the portals of the University but must be made available to larger numbers outside as well. Referring to the Indianization of the Services the speaker said that at the moment when the Imperial Civil Service and other competitive examinations for their services had begun to be held in this country as well as in England, it behoved Indian Universities to steadily persevere in acclimatizing the highest culture in their midst so that their alumni winning highest places in these competitions might meet their English colleagues selected in England out of pick of English Universities on absolutely equal terms. The Indianization of the higher services in India could proceed apace with increased efficiency and economy only in proportion as Indian recruits naturally superior to their English colleagues in the knowledge of country and people prove themselves at least their equals in character, culture and faculty. Also incidentally he referred to the demand for rapid vernacularization of the University to which he expressed his opposition on ground that Indian Universities were not on a level with English Universities in the higher branches of study. Turning to the effect of the solution of the problem of education on the unity of India Sir Chimanlal said unity was not even yet at permanent acquisition of their inner political consciousness. The educated few have grasped it but it had still to spread among masses and like liberty, like swarajya, like economic and cultural self-sufficiency it could be securely won by them only by continuous vigilance and well-directed education for decades to come.



Economic Gleanings.

WORLD'S PROGRESS IN FEW WORDS.



The price of coolie and other rice in Ceylon is rising. Heavy bookings by German and China buyers are reported from Rangoon.

The Odzi Canning Works of the Rhodesia Meat Packing Company, Limited, have resumed operations with a good supply of cattle in hand.

The South African Woollen Mills, Limited, were awarded a gold medal at the recent agricultural show at Bloemfontein for blankets, rugs and tweeds.

The Legislative Council of British Honduras has agreed to reduce the export duty on chicle from 3 cents to $1\frac{1}{2}$ cents per lb. to encourage exports.

The *Johannesburg Daily Star* has just published its first annual special supplement dealing with finance, commerce, and mining in the Union of South Africa, Rhodesia, and Lourenco Marques. The supplement furnishes an instructive review of the economic situation in those countries.

Mr. E. W. Knox, general manager of the Colonial Sugar Refining Company, accompanied by Mr. Dixon, one of the officials of the Company, has come to England at the request of the British Government to confer with representatives of the Colonial Office and India on the Labour question in Fiji. On the result of this visit the future of the sugar industry in Fiji will largely depend.

Now that the Jamaica Government has completed experimental work in connexion with pimento oil, it proposes to investigate the possibilities of making condensed milk in the island. A year ago an experimental plant for the purpose was imported. Last year Jamaica imported £109,000 worth of condensed milk. According to the Director of Agriculture, the establishment of a condensed-milk factory in the island will mean an addition of £1,000,000 to the wealth of the colony.

The Trans-Zambesia Railway will be officially opened on July 1. Full particulars of this undertaking appeared in a Special Section of the *Trade Supplement* on May 6.

Whilst the conditions under which business has been carried on throughout the Union of South Africa generally have shown but little change during the month, reports from most of the larger centres indicate slight improvement.

Johannesburg is to borrow £38,000, in addition to the £119,000 agreed upon last August, for extensions of electric lighting services, and negotiations are proceeding with the Victoria Falls Company for additional supplies of current.

The Premier Paper Mills, Johannesburg, which were lately converted into a limited liability company with a capital of £65,000, are specializing in the manufacture of wrapping paper, for which South African raw materials are available.

Increased activity in the building trade is reported from several centres, says the monthly report of the Standard Bank of South Africa, and work is now being put in hand which has been held up for a considerable time on account of the high cost of labour and materials.

The Kenya Legislature, in special Session, has abolished the income-tax with effect from the end of 1921. The result is a deficit of £103,000, which is being made good by heavy increases in the import duties on liquors, tinned goods, motor-cars, timber, etc. With the double object of raising revenue and encouraging local industries by protection, the duties on rice have been raised to 25 per cent, on other cereals, except wheat, to 30 per cent, on timber to 50 per cent, on wines to 60 per cent, on tobacco to 90 per cent, on motor-cars, cycles and parts to 30 per cent and on provisions to 30 per cent, all *ad valorem*. The duty on distilled liquors has been raised to 60s. per imperial gallon and on butter and cheese to 1s. per lb.

Prices of drugs and chemicals have increased enormously in Germany. Cocaine, for instance, is 240 times pre-war level, quinine 180 times, boron preparations 120 times, and iodine preparations 105 times. Bromine preparations have increased the least—*viz.*, 20 times.

A healthy trade balance was shown last year by the Czecho-Slovak textile industry. The value of raw material imported was 4,600 million crowns and of manufactures exported 7,300 million crowns. In 1920 the respective figures were 5,000 million crowns and 2,500 million crowns.

During the course of its investigation into the footwear and tanning industry the Board of Trade and Industries, says the *Cape Argus*, was impressed with the fact that there is a general and strong desire that legislation should be brought into force prohibiting the manufacture or sale locally or the importation of adulterated leather. The Board recommends the introduction during the present session of Parliament of the Adulteration of Leather Bill which was drafted some time ago by the Department of Mines and Industries.

The Government of Jamaica has agreed to a proposal for the appointment of a Board which will conduct an advertising campaign in the United Kingdom, Canada and the United States, to attract tourists and investors to the island. A sum of money will be placed at the disposal of the Board to advertise the island abroad and to arrange with shipping companies to develop the tourist traffic to that section of the Caribbean. It is announced that business men are willing to double the grant which it is proposed the Government should make for the purpose.

Experiments by the Colonial Department of Agriculture have demonstrated that pimento oil can be produced in Jamaica in large quantities. Not only has oil been produced at the laboratory from pimento leaves, but iso-eugonol and vanillin have been made. The process has passed beyond the experimental stage, and as it is certain that all the pimento oil produced in the island will find a ready sale abroad, the Government has decided to pass over to private enterprise the data in its possession. A factory is to be located in the central portion of the island, and machinery to produce 10,000 lbs. of oil has been ordered from Scotland. The crude oil will be exported.

Czecho-Slovak wool imports were valued at 2,200 million crowns in 1921, and also in 1920, whilst exports of woollen goods dropped in value to 6,300 crowns in 1921 against 6,700 crowns in the previous year.

There is a considerable demand for cement in Norway, Sweden, Finland, and other Scandinavian countries for construction needs on hydro-electric power plants. Supplies of cement are being obtained from Poland.

Coal and coke from Czecho-Slovakia found a market last year in Poland, Yugo-Slavia, Hungary, Italy, Bulgaria, Rumania, Switzerland, Denmark, and Danzig. The excess of Czecho-Slovak exports over imports amounted to 379,000 tons coal, 4,482,000 tons lignite, 185,000 tons coke, and 154,000 tons briquettes.

The Natal coal industry has been active and the output of the Natal collieries for April reached 256,435 tons, as against a total of 230,960 tons in April, 1921. The total quantities exported and bunkered during the month were 97,006 tons and 82,554 tons respectively; and it is noteworthy that the tonnage exported constitutes a 'record' for the Province. India is at present the largest consumer.

In the report of the Federated Malay States Chamber of Commerce for last year reference is made to the state of business in the native bazaar. Business, in iron and steel bars, corrugated iron, paints, cement, and general goods was considerably greater than in the closing months of the previous year, but the majority of sales were executed at a loss, as a result of the continued liquidation of surplus stocks. As new shipments of corrugated iron, cement, iron bars, etc., arrived, renewed efforts were made to clear old stocks, in consequence of which prices receded still further.

During the latter part of 1921 large shipments of German goods found their way on to the local market *via* Java, all of which were readily absorbed, the favourable exchange to Germany enabling goods to be sold at much below British manufacturers' prices.

With perhaps the exception of piece-goods, iron and steel, motor cars and cycles, stocks were, by December, reduced to normal proportions, although supplies of most commodities remain in excess of demand. Manufacturers' prices generally were at a much lower level than in the previous year, and in some cases were little above pre-war figures.

Treaties of commerce with Denmark, Portugal, Spain, and Greece are contemplated by the Czecho-Slovak Government.

The chief of the Mines Department of the United States has arrived in Prague, in order to study the mineral situation in Czecho-Slovakia.

The Italian Chamber of Commerce of St. Paulo, Brazil, has decided to found a permanent sample museum of Italian industrial products.

The Secretary-General of the British Chamber of Commerce for Italy will be visiting London from June 5 to 14 and will be pleased to interview, by appointment, any British traders interested in Italy. His address will be the Grosvenor Hotel, Victoria, S. W.

Our Australian Correspondent telegraphs that at a meeting of shipping and mercantile interests with the State Governments, arrangements have been made for the application of rigorous measures to check wharf pillaging. The chief method contemplated is a system of special police control.

Canada's imports for May amounted in value to \$66,121,000 (£14,700,000), a decrease of \$2,381,000 (£530,000) as compared with May last year. Exports amounted in value to \$69,146,000 (£15,370,000), being an increase of \$9,593,000 (£2,132,000) over the corresponding period last year.

The new fuel arrangements and the deepening of the Colombo harbour are attracting to Colombo a large number of ships plying to the Far East and Australia. Colombo promises to be a coaling centre of some importance in the near future. Next month some nine Danish vessels alone will take some two thousand tons of coal.

Italy's trade with British India shows an improvement. Last year the value of Italian imports into India totalled £4,134,000, against £1,369,000 during the previous twelve months, whilst that of Indian exports to Italy totalled £6,674,000, against £7,877,000. The chief Italian goods imported into India last year were cottons (£1,291,000) and motor cars (£394,000), whilst the principal Indian merchandize exported to Italy were raw cotton (£3,585,000), jute (£854,000), and hides (£307,000).

Our Bukarest Correspondent states that the Rumania Council of Ministers has decided to authorize the free export of all cereals except wheat and rye and their by-products.

On the initiative of the Italian Commercial Museum lately established at Belgrade, a series of lectures will be given in Italy in order to illustrate the possibilities of trade between the two countries.

Trade in the new season's grain crops of Czecho-Slovakia has been freed from control. The effect of this may be to increase the export of barley and malt, and improve the opportunities for the import of manufacturers.

Our New York Correspondent reports that wholesale prices in the United States rose again in May, the Department of Labour's index figure advancing five points to 148. The level is now three points higher than a year ago, every group advancing over April, except chemicals and drugs.

According to a report by the Italian Chamber of Commerce in Tunis, goods of Italian origin imported into Tunis in 1921 amounted in value to 43,734,117f., and included cotton fabrics (11,329,627f.), cotton yarn (3,131,694f.), spices (2,040,400f.), machinery (1,921,294f.), raw silk (1,371,057f.), and woollen goods (1,052,631f.).

The Department of Overseas Trade (73, Basinghall-street, E.C. 2) has received from the Commercial Secretary, Buenos Aires, a translation of new regulations regarding ships carrying inflammables to the Port of Buenos Aires. These regulations specify the quantities of cartridges, turpentine, and other dangerous goods which vessels entering the port may carry.

Our Milan correspondent reports a further step in the negotiations between an American group of bankers and the Yugo-Slav Government regarding the construction of an Adriatic railway to link up the ports of Spalato and Sebenico with the interior of the country. He states that the Yugo-Slav Government has accepted in principle the offer of a loan of 100,000,000 dollars to finance the work on the following conditions:—Thirty millions in cash and the rest in material for the construction of the railway. The loan will be issued at 85 with 8 per cent interest per annum, payment within forty years.

The Legislative Council of Jamaica has passed a further vote for geological surveys in the island. The expert who has been directing the work since last year has located abundant supplies of water underground in one or two centres. Deposits of lignite have also been found.

An international bank, the Schlesische Kreditanstalt A. G. has been formed in Upper Silesia by the Amstel Bank, Amsterdam, the Austrian Credit bank, the Warsaw Diskontobank, the Mortgage Bank, Lemberg, and a group of Silesian industrials. Its capital is 200 million Polish marks.

Hemp makes an important contribution to industrial life of Italy, in both the spinning, weaving and also the rope-making branches. The annual output of yarn, cloth, rope, and string approximates 25,000 tons. To produce this amount the mills consume about one-third of the Italian hemp crop, the remainder of which is exported.

The "Sulfobioxid Aktiengesellschaft" has been founded in Bukarest by the "Allgemeine Gesellschaft für Chemische Industrie," Berlin, the "Banca Romaneasca," and other financiers in Rumania. The German Company brings into the business the whole of its property in Rumania, including patents, together with its experience in refining petroleum, etc.

The Czecho-Slovak Navigation Company has been transformed into a company for the navigation of the river Elbe and its tributaries and canals. Of the capital of 125 million crowns, 70 per cent will be furnished by a group of banks and 30 per cent by the Government. The Austrian Navigation Company of the North-West has called a general meeting with a view to a fusion with the Czecho-Slovak Company.

There is an increasing demand in Finland for motor vehicles—which are not manufactured in the Republic. German vehicles are in favour, owing to the rate of exchange and terms of credit. United States agents also do considerable business in light cars, especially in seven-seaters. Finland also requires motor trucks and lorries for industrial and agricultural purpose, preference being expressed for four-cylinder trucks of from 1 to 2½ tons.

On account of the great scarcity of sugar in Germany, import is now entirely free from any restriction, and large orders have already been placed abroad. Stocks at Hamberg are being cleared, and import on a large scale is expected. The price tends to decline.

It is announced in British Guiana that a party of Canadians will visit the colony at an early date to prospect in the diamond fields of the colony. The expedition will take, as part of its equipment, a seaplane, with two pilots who served in the Royal Air Force.

Arising from the commercial treaty which has been concluded between Italy and Poland, our Milan correspondent states that Italy will benefit from the exports of upper Silesian coal and the exploitation of the mineral wealth of the region. Negotiations have also been in progress with the object of assuring to Italy equality of treatment in connexion with the developments of the petroleum fields of Galicia. An important result of these arrangements will be to benefit the port of Trieste.

The West India Committee announce that a system of wireless telephony has now been successfully established in the British West Indies. The group enjoying it is the Turks and Caicos Islands, Grand Turk being now connected up with South Caicos and Salt Cay, distant twelve and eight miles respectively. By this wireless telephone the Commissioner is now able to converse with officials in the neighbouring islands. The system can also be used for wireless telegraphy, and has already proved of great value in enabling the people of Grand Turk to know when steamers are approaching or are leaving Santo Domingo for their shores.

At a conference held at Melbourne a few days ago of graziers and proprietors of meat works the Minister of Customs explained that under the new subsidized export scheme Australian meat would carry an indelible brand. It could then be known and followed in the markets of the world, and not be at the mercy of unscrupulous traders overseas. The purpose of the Government was to repair the previously damaged reputation and to maintain a high standard for exported meat. Without the intended subsidy no Australian beef could be exported this season, and the British market would pass completely into the hands of foreign competitors.

Economic Reviews Reviewed.

WITH EXCERPTS AND COMMENTS.

Mr. Keynes' Plan for Allied Debts.

At the Liberal Summer School which is being held at Oxford this year, Mr. J. M. Keynes made an important declaration at one of its sessions on the policy which he believed the Liberal party should pursue on the questions of reparations and Inter-Allied debts, writes a special correspondent of the *Manchester Guardian*.

The right solution of this vexed business of reparations, Mr. Keynes said, was not really as complicated as it seemed. It was simply that England must abandon the claim for pensions and bring to an end the occupation of the Rhinelands. The Reparation Commission must be asked to divide their assessment into two parts—the part that represented pensions and separation allowances, and the rest. With the abandonment of the former, the proportion due to France would be correspondingly raised. Should France agree to this, as it was in her interest to do, and terminate the occupation, it would be right for them to forgive her and the other Allies their debts and to accord a priority on all receipts in favour of the devastated areas.

Could England secure a real settlement by these sacrifices, Mr. Keynes thought she would make them regardless of what the United States might say or do. That was a settlement satisfactory alike to sentiment and to expediency. Those who adopted it would find, Mr. Keynes prophesied, that they would have with them the tide and a favouring wind.

Though such a settlement was inevitable it was not apparently to be a thing of an early to-morrow. M. Poincaré had hardly travelled far enough along the right road as yet, but by and by the force of circumstances, speeded up, perhaps, by his own policy, would bring him to the necessary stage of disillusionment. At present he had reached the point of offering to talk sense in return for an enormous bribe which no one was in a position to give him. As eventually he would have to talk sense without a bribe, his bargaining position was not strong. Both the French and the British Prime Ministers had the obstacle of their past utterances to get over, and it was scarcely easy for Mr. Lloyd George, whose hands were not clean in the matter, to give a clean settlement, however reasonable his present intentions might appear to be. That was an important reason why others should persist in a clear and decided policy.

Mr. Keynes did not share Lord Grey's faith in an international loan as the solvent of Europe's financial trouble. In his opinion, the international loan on a great scale was as big an illusion as reparations on a great scale. It could not and would not happen. The only immediately practical thing to do, it seemed to him, was to grant a moratorium to Germany and to put off until next year the discussion of a final settlement. Then, with proper preparation, there ought to be a grand conference on the whole connected

problem of inter-Governmental debt, with representatives of the United States present, and possibly the conference could be held at Washington.

LORD GREY'S PROPOSAL.

The final lecture to the School was given by Viscount Grey, whose speech was in substance a reaffirmation of his Newcastle declaration on the joint questions of reparations and inter-Allied indebtedness. It will be remembered that he laid down at Newcastle two general propositions. The first was that England should pay the American debt and not entangle it with the debts between herself and her Allies in Europe. And the second was that she should use her creditor position in Europe in the most generous way possible to promote a settlement. The Balfour Note, however, had since been issued and it ran counter to both these propositions.

"Our attitude," Lord Grey said, "was that we wished to be generous up to a point, but beyond that point, our attitude was one of contingent generosity. It was a perfectly logical position, but, after all, it meant that in a great emergency where there was a chance of doing a big thing the Government had chosen to do the little thing. They had chosen to say that if no one else would do a big thing it could not be expected that we should do it."

"This did not seem to him like rising to the occasion" said Lord Grey. The position was bad enough before the Note was written; it was much worse now. Opinion in America was just as determined as ever that we should pay the debt, but in addition to paying the money, we should incur, as the result of the Note, a good deal of political friction, and it might be that we should not find it so easy to arrange the terms on which the repayment would be made. So far from bringing a solution nearer in Europe, the Note had intensified the feeling of despair. It had tied the hands of the Government in the present conference and made the prospect of a settlement more remote.

In the settlement there must be four conditions:—

1. German reparations must be reduced to a manageable and practical amount.
2. There must be a Moratorium of adequate duration for the payment of reparations.
3. What was possible must be done to put Germany on her feet.
4. When the foregoing conditions had been arranged, Germany, provided she fulfilled her treaty obligations, should be admitted to the League of Nations.

Lord Grey was positive on the point that something must be done to put Germany in a position to pay her creditors. In this connection he still adhered to a belief in the possibilities of an international loan, although he was by no means dogmatic on the subject.

While severely critical of the British Government's unstable policy, he admitted that more than a settled policy, even a settled policy of the best kind, was necessary if progress was to be made in the European situation. Nothing useful would be done unless the British and French Governments worked together.

The French Government and French public opinion should face the real facts of the situation, and should realize that if matters did proceed to a crisis and Germany became bankrupt nobody would get a penny.

As part of the complete settlement, however, the French were entitled to say that if reparations were reduced and if assistance were given to Germany by an international loan, it was only fair that there should be conditions attached which would secure that the relief and the help given to Germany were really to be used by Germany to get into a sounder financial position to do the utmost she could to pay the reparations bill.

Mill Industry in India.

The *Labour Gazette* for July gives some interesting statistics showing the growth of the mill industry in India for the past 40 years. In 1880-81 the cotton mill industry had 13,283 looms, 1,471,730 spindles and employed 47,955 persons. In 1919-20 the number of looms was 117,558, the number of spindles 6,714,265 and the persons employed numbered 305,511.

Of this total the Bombay Presidency employed 211,221 persons of whom 156,587 were men, 41,645 women and 13,069 children. The Bombay Presidency employs approximately 69 per cent of the total labour employed in the cotton mills in India. Bombay City and Island employs most men and women, but Ahmedabad employs the largest number of children. The following table shows the statistical position of the cotton mills in the Presidency:—

Bombay City.—Number of mills 83; No. of looms 60,475; No. of spindles 3,031,953; Average number of daily employed 136,746; Men 105,796; Women 27,801; children 2,149.

Ahmedabad.—No. of mills 64; No. of looms 22,731; No. of spindles 1,074,886; Average No. of daily employed 42,456; men 29,422; women 7,259; children 5,775.

Sholapur.—No. of mills 6; number of looms 4,331; No. of spindles 243,848; average number daily employed 14,914; men 9,672; women 3,436; children 1,806.

Rest of the Presidency.—No. of mills 22; No. of looms 6,232; No. of spindles 395,842; average number of daily employed 17,105; men 11,617; women 3,149; children 2,339.

The rest of the Presidency includes 5 mills in Broach, and 3 each in Dharwar, East Khandesh, Surat and Viramgam. There are also two mills in Kaira and one each in Poona, Belgaum and Sukkur. These, however, are small in size as compared with the mills in the city of Bombay.

These mills in May spun 43 million pounds of yarn and produced 28 million pounds of woven goods.

The month of June says the issue was a quite one so far as strikes are concerned. The total number of industrial disputes in progress involving stoppage of work was 10 and the number of workpeople involved in all the disputes was about 2,000 as compared with 15,000 in the previous month. Of these disputes 7 were in the textile industry. The aggregate duration of all disputes during June this year was approximately 4,250 working days as compared with 54,930 days in May 1922, and 79,804 days in June 1921. The time lost, says the *Labour Gazette* for July, is the lowest

on record since April 1921 when statistics were first collected.

Another interesting article in this issue compares the number and value of Money Orders issued at 13 post offices located in mill areas with the number and value 10 years ago. The figures for 1920 show 306,256 Money Orders issued to the value of Rs. 70,94,193, the figures for 1911 being 183,820 and Rs. 29,76,144 respectively.

The increase in the number of Money Orders is 67 per cent and in value 138 per cent. While it cannot be stated exactly what portion of these Money Orders were sent by the mill hands, it can safely be assumed that the greater part of the business was from the workmen. As the *Labour Gazette* points out "The mill worker is, of course, first and last an agriculturist who comes to Bombay to earn sufficient to enable him to return to his village. He remits to his family and relations part of his earning and the importance of these remittances to many villages in the Konkan and the Deccan may be gathered from these figures."

Another note replies to the 'criticism of sweepers' budget published in the *Labour Gazette* for June, in the course of which it is pointed out that the budgets of the Labour Office are not estimates of what workers would like to spend or ought to spend but of what they actually do spend.

An interesting table shows the increase in the cost of living abroad. While in India the cost of living has increased by 63 per cent, the percentage for Germany is 3,362, while Poland and Austria (Vienna) show colossal increases of 52,258 and 87,100 per cent respectively, the most fortunate country in this respect in South Africa, where the cost of living has increased only 22 per cent.

The Indian Factories Act of 1911 as amended this year is printed in full in the issue and other interesting articles deal with the German cost of living index and current notes from abroad, the latter containing the results of an enquiry recently held in the United Kingdom by certain Civil Service Associations as to the expenditure in middle class household.

Confiscation by Taxation.

We take the following from the *Industrial Canada* for May last:—

A strong protest against excessive taxation is voiced by the *Edmonton Bulletin*. While admitting the necessity for taxation, in order to maintain governments, federal, provincial and municipal, together with the public services they perform, the *Bulletin* maintains that there should be a balance between the services rendered by the government on the one hand and the services rendered by the tax-payer through the investment of capital on the other. Over-taxation will inevitably result in the withdrawal of capital from channels of investment, which contribute to furnish employment and bring prosperity. It is just another case of killing the goose that lays the golden eggs.

Excessive taxation is a fruit of war-time experience. Then, nothing was permitted to stand in the way of providing the sinews of war, and rightly so. The nation went to the extreme of sacrifice in raising men and money to wage the war and submitted to unprecedented taxation. But, as the *Bulletin* points out,—“up to the present time all governing bodies, educational, municipal, provincial and national, have retained war time outlook regarding expenditures and taxation. Under war conditions the question was,

'What is needed?' not, 'Where will the money come from?'. The boom that followed the war seemed to confirm the war idea that the greater the spending, the greater the prosperity."

It is in its relation to unemployment and business stagnation that this question of taxation is of the utmost importance and the *Bulletin* puts the case very clearly in the concluding paragraphs of its editorial,—

"Today Canada and the world is in the depth of financial depression. Unemployment exists on this continent as it has not done since the black days of the early 90's. The inflation of credit incident to and following the war has given place to a condition of deflation. Prices are going down, wages are going down. But taxation has gone up, and is still going up. Under pretext of war necessity, taxation was increased in every line, and new forms of taxation sought out by the governing body of the nation. Reason would have dictated to provincial and municipal bodies the urgent necessity of keeping down their expenditure and taxation as national expenditure and taxation went up. But the direct opposite was the fact. National expenditures and expedients of taxation were taken as an example to be followed instead of to be avoided by our provincial and municipal governments. The result is that with the earning power of both labour and capital at its lowest ebb taxation is actually higher than when our earning power was at its best. Not only so, but both municipality and province, as well as the nation, instead of seeking to lighten the burden, are seeking opportunity to levy new and greater burdens. While the governments of the Dominion and of the city of Edmonton are making more or less substantial reductions in costs of government, the government of the province of Alberta has added largely to the annual controllable expenditure, rendering necessary largely increased taxation.

"The only remedy so far offered for unemployment is more and greater governmental expenditure, which means higher and still higher taxation. The direct responsibility of the conditions of high taxation for present conditions of unemployment does not seem to have yet struck any of our governing and tax-levying bodies.

"The only real cure for unemployment is the investment of capital in productive enterprise. Because capital is not being invested in the erection of new dwellings or business houses in our towns and cities;

because new farming, lumbering, mining or railway enterprises are not being developed by the investment of capital, there is a lack of sufficient employment for the workers. Why are houses not being built in Edmonton in large numbers? Costs of material have come down; wages have been reduced, but taxes here and elsewhere have gone so high that they amount to confiscation. It is a mistake to discuss the civic levy as the only tax the citizen has to pay. The provincial and Dominion taxes are paid by the same citizens who pay the civic taxes. The fact is that in Canada as in the United States and in Britain the burden of governmental taxation has drained so large a part of the capital of the nation away from its owners that private enterprise is paralysed and industrial conditions are deplorable as they are.

"Relief of the tax-payer from the confiscation of his capital, either of money or other property, by multiplied taxation is the first step towards the cure of the unemployment situation. To relieve taxation there must be a reduction in current as distinguished from capital expenditures. Current expenditure merely eats up the current taxes and leaves the country no better off. Capital expenditure is presumably for purposes of reproductive enterprise such as railway extensions or irrigation, or reclamation work. The tax wasters must be cut off the pay roll in order that the tax payer may have capital to invest in productive enterprise. The government cannot take away the capital of its citizens to spend in carrying on the mere functions of government, or in satisfying the fads and fancies of those who raise the loudest clamour, and still leave the capital to be invested in productive enterprise. Confiscation by taxation is not the less confiscation; nor is it the less harmful because three or four governing bodies are engaged in the giddy enterprise instead of only one."

Topics from the Journals.

July 1922.

Mysore Engineers' Association Bulletin.—The Cauvery Valley and Krishnarajasagara.

Canadian Forestry Magazine.—Selling Scenery, by R. Black. Growth of Forests for Fuel, by Prof. W.N. Millar.

Poona Agricultural College Magazine.—Experiments on cultivation of Sugarcane, by M. G. Athalye.

The Agricultural Journal.—Improvement of Cocoanut Jaggery Industry by R. V. Norris, D.Sc., R. Visvanath and K. G. Nair, B.A.

Perfumery and Essential Oil Record.—Oil of Lemon Grass by A. H. Bennett, Messina.

Social Service Quarterly.—The Problem of Adult Education, by Principal J. Mackenzie, M.A.

The Suez Canal and its creator, Ferdinand de Lesseps, formed the subject of the first of the staff lectures of the summer term at the French Institute, Cromwell-gardens.

M. Vieille, Professor at the Institute, lecturing in French, said that the critical moment in de Lesseps's life was his appointment as French Vice-Consul at Alexandria. It was chance that first turned his thoughts to the undertaking that made him famous. A case of cholera on board caused his ship to be put into quarantine in Alexandria harbour. De Lesseps was bored with his compulsory idleness, and read with eagerness some volumes of an enormous work written by the professors who accompanied Napoleon on his Egyptian expedition. He was particularly attracted to "The Canal of the two Seas." From this moment de Lesseps dreamed continually of the Canal which should unite the Mediterranean with Red Sea. It took 23 years for his dream to come true.

In due course de Lesseps returned to France and settled on the land as a gentleman farmer. He never forgot the canal, and when he heard that the Khedive Mahomed Ali was dead and that Said, his son, had succeeded he knew that his hour had struck. Said had long been a friend of his, and Said consented to the plan, should his generals view it favourably. The generals were hardly expert engineers, but they appreciated a fine horseman, so when de Lesseps on horseback cleared a dangerously high wall they forthwith approved his schemes.

Egypt now supported de Lesseps, but he had another formidable adversary to subdue—the British Government, inspired by the redoubtable Lord Palmerston, who was jealous at the idea of the installation of a French Company on the Suez isthmus. Lord Stratford, at Constantinople, was bidden to do all he could to obstruct the plan, but happily failed. In November 1869, the canal was completed.

Mysore Economic Development Board.

PROGRESS REPORTS.

Board of Agriculture.

The following is the proceedings of the thirteenth meeting of the Board of Agriculture, held in the Chamber of the Second Member of Council on Saturday, the 15th July 1922, at 3 P.M.

Present.—Mir Humza Hussain, Esq., B.A., B.L.,
Second Member of Council, (*Chairman*).

Members.

1. The Director of Agriculture.
2. The Live-stock Expert.
3. The Superintendent of Sericulture.
4. The Revenue Commissioner in Mysore.
5. The Chief Engineer in Mysore.
6. The Superintendent, Government Gardens.
7. The Registrar of Co-operative Societies.
8. Mr. G. Girimaji Rao.
9. „ S. Lakshman Reddi.
10. „ A. Gopalakrishna Naik.
11. „ Bellur Nanjegowda.
12. „ Purushottam Anandagiri Gosayee.
13. „ H. Krishna Sastry.
14. „ Nadig Lakshman Rao
15. „ T. Narasinga Rao.
16. „ B. Srinivasiengar.
17. „ K. Suryanarayana Rao.
18. „ B. Shama Rao.
19. „ R. Gopalaswami Iyer.
20. Lt.-Col. W. L. Crawford.

Mr. D. C. Subbarayappa (*Secretary*).

Absent.—Mr. N. Krishna Iyengar.

Before the regular business of the meeting commenced, Mr. H. Krishna Sastry spoke expressing regret at the premature death of Mr. S. A. Javaraya of Seringapatam, who was for a long time member of the Board of Agriculture and took an active part in its deliberations. He proposed, on behalf of the Board, that their heart-felt condolences may be conveyed to the members of the bereaved family. Mr. Purushottam Anandagiri Gosayee supported the proposal and the Chairman was agreeable to the services of Mr. Javaraya being placed on record and to the condolences of the Board being conveyed to the members of his family. The proposal was carried *nem con.*

2. Constitution of Sub-Committees for investigating various items of work in the Programme for 1922-23. This subject was first taken up for consideration.

The first item on the programme for the half year ending 31st December 1922 relating to the formulation of an agricultural policy for the State elicited much warm discussion from the members. While the Revenue Commissioner and the Director of Agriculture thought that the formulation of a policy of the kind referred to was the concern of the Government as well as of the Department of Agriculture and not that of a Sub-Committee of the Board of Agriculture, most of the non-official members, chief among whom were Messrs. R. Gopalaswami Iyer, H. Krishna Sastry, Purushottam Anandagiri Gosayee and T. Narasinga Rao, were of opinion that just as the Educational policy of the State was formulated in the now memorable Educational Memorandum, the agricultural policy of the State should also be formulated in a definite manner, so that people might be in a position to know to what extent they might

expect agricultural development in a certain number of years.

As the general sense of the members was for the retention of the subject on the programme, the Chairman had no objection to the same.

The provisional lists of members for the various Sub-Committees were next gone into one by one and passed with additions and alterations. The lists as finally passed by the Board are appended hereto.

3. Increase of Agricultural Production in the State.—Dr. Coleman's note on this subject was next taken into consideration.

The Chairman read out the summary of Dr. Coleman's conclusions printed at page 10 of the note and called for the views of the members thereon.

All the conclusions arrived at were generally agreed to except the fourth which related to the passing of gomal land into private occupation and the tenth which related to the increase of land assessment by at least 25 per cent to provide funds for the improvement of agriculture in the State. Both these subjects met with vehement opposition at the hands of the majority of the members, and it was *resolved* that the subject relating to improvement of gomal may be further threshed out at the next meeting of the Board, and that the Revenue Secretary to Government may be informed, in reply to his letter, that the Board generally accept all the conclusions of Dr. Coleman as given in his note except the fourth and the tenth relating to gomal and increase of land assessment respectively.

4. Proposed Government of India Bill for the restriction and control of cotton traffic.—As the Government of India wanted an early expression of views on the subject, copies of the Bill were previously circulated among the members and their opinions called for. Most of the members had already expressed their opinions in writing and when the subject was formally brought up for consideration at the meeting, they adhered to their original opinions, which are printed as an appendix hereto.

All the non-official members except Mr. T. Narasinga Rao were against the introduction of the Bill. Lt.-Col. Crawford was for introducing it later on but not now. It was accordingly *resolved* that a reply may be sent to the Secretary to Government saying that the non-official members of the Board were generally against the introduction of the Bill into Mysore.

5. Recommendations of the Indian Sugar Committee.—Extracts from the Report of the Indian Sugar Committee relating to Mysore, together with the views of the Director of Agriculture in Mysore thereon, had been previously circulated to the members and the summary of conclusions and recommendations was considered item by item.

Item No. 4, about the reclamation of saline lands under the Marikanave Reservoir, was referred to the Commercial Crops Sub-Committee for consideration and report.

Item No. 6, about the installation of power pumping plants, was reserved for consideration at a later meeting, along with Mr. N. Rama Rao's proposition *re* the transfer of the installation of Power Pumping plants in respect of sugarcane from the Industries and Commerce Department to the Department of Agriculture.

The members of the Board were in general agreement with the other recommendations of the Indian Sugar Committee, and it was *resolved* that the Secretary to Government may be informed accordingly.

The meeting terminated at 6 P.M.

MIR HUMZA HUSSAIN,
Chairman.

Madras State Aid to Industries Bill.

The following is the statement of objects and reasons of the above Bill :—

The objects of this Bill are to afford, subject to suitable limitations and safeguards, State assistance to industrial enterprise in this Presidency, partly by financial methods and partly by providing on favourable terms raw materials, firewood or water, being the property of Government. The special circumstances which at the present stage of India's economic growth, tend to retard the development of industries and of industrial finance have been fully analysed in the report of the Industrial Commission and need not be recapitulated. It is sufficient to observe that, while deficiency in business experience and practical knowledge of the technical details of an industry have contributed to delay progress, the general ignorance of industries and of banking on the part of the major portion of the population and the timidity and conservatism of the investing public have been no less potent causes operating in the same direction.

2. The following are the main features of the measure now proposed :—

The scope of the Bill extends to industries which are of economic importance, and are either new, or nascent; or are sought to be introduced in areas in which they are still undeveloped; and, lastly, to cottage industries.

The opportunity has been taken to place upon a statutory footing the Board of Industries now existing by executive order, but with an enlarged and partly elective constitution. Its functions as hitherto will be advisory.

The forms of financial aid contemplated by the Bill are loans; subsidies (not exceeding 40 per cent of the cost) for the purchase of machinery and for the conduct of research; State guarantees either of a minimum return on the paid-up capital of an enterprise or of the due discharge of cash credits, overdrafts or advances allowed by a bank to the management of an approved industrial concern; and, lastly, the taking up by the State of shares and debentures in industrial enterprises. All loans or advances are to be secured as a charge upon the whole assets of the enterprise subject to prior encumbrances and by collateral security if required.

Provision is made to enable Government to require the recipient of State aid to submit to inspection both the premises, plant and stock and the accounts of the concern, and to furnish, if required, returns of its production and any other special accounts or statements; in the case of the larger concerns the Bill provides for the exercise of control by the appointment of Government Directors or otherwise.

The Bill further provides that until the conditions on which assistance is granted have been fulfilled Government may limit the profits or dividends to be paid. Further, all moneys payable under the provisions of the Bill are to be recoverable by the revenue authorities as arrears of land revenue.

Lastly, it is provided that when an industrial enterprise has received assistance in the form of a subsidy or a grant of raw material, firewood, etc., it shall be bound to repay the value of the assistance at the close of a fixed term of years, if in the interval it is shown to be sufficiently prosperous.

3. In view of the peculiar character of the present measure and in order to render the working of the Act as flexible as possible, it has been deemed desirable to confer upon the Government extensive powers to regulate various matters by means of statutory rules to be made under it.

U. P. Board of Industries.

The 2nd Meeting of the Board of Industries was held at the Technical School, Lucknow, on the morning of the 25th July. The agenda was a full one and *inter alia* the following business was transacted.

An application on behalf of the Prem. Spinning and Weaving Mills Co., Ltd., Ujhani, District Badaun, for financial assistance was not recommended to Government. The Board agreed to the findings of the Board of Communications as regards Feeder Railways. After considering the Government of India's letter about the simplification and improvement of the returns of Rail-borne and Inland trade, the Board deprecated the idea of a break in the maintenance of registers showing movement of trade. Statistics maintained at great expense and trouble for the past 20 years would be nullified by any change in the policy, reducing blocks, stations of report or number of articles. The Board was of opinion that the *status quo* must at least be maintained. The consideration of the Almora Hydro-electric scheme and the Weaving Factory was postponed, as full information was not available. There was a great deal of discussion on the question of compulsory acquisition of land for industrial purposes and the Board resolved that (a) acquisition of land for industrial purposes in the interest of Companies be made, provided the four criteria referred to by Government are present, but that no compulsory acquisition should be effected within any Municipal area; provided further that the aforesaid proviso will in no way affect acquisition of land within Municipal areas which is merely used for agricultural purposes or of barren land. These acquisition proceedings should take place only in the case of Companies falling within the definition of the Indian Companies Act of 1913; (b) a copy of the application of the parties seeking compulsory acquisition should be sent to the party to be expropriated. This will enable him to make a move against the applicant before the executive authority. The stage of impugning the validity of acquisition will come in after the notification has been issued. The District Judge and no other tribunal shall adjudicate the points of difference between the executive authority and the expropriated party. An appeal shall lie to the High Court; (c) the Board agreed that the definition of "Public Purposes" be extended so as to include acquisition of land required for housing labour or for housing expropriated individuals; (d) the Board did not agree with the recommendation that a reference might be made against the award of the Acquisition Officer to the Judicial Tribunal on the score of its being excessive; (e) no change was considered desirable in the existing rules about grant of gelatine.

With a few minor alterations, the draft prospectus of the Jhansi Technical School was approved and recommended for sanction to Government. The proposal of the Director of Industries to grant a loan-in-aid to Mr. Anand Saroop of Muzaffarnagar to start a Blanket Weaving Factory on up-to-date lines was approved, on the condition that the loan should bear $7\frac{1}{2}$ per cent interest.

An emergent meeting of the Board of Industries, U.P., was held in the office of the Director of Industries, U.P., Cawnpore, on the 4th August, and they considered the very important question whether the lease of the East Indian Railways and the Great Indian Peninsula Railway should be renewed or terminated. It was resolved by a majority vote that the management of the two Railways should be taken up by the Government on the expiry of the term of lease, and that with a view to make the management more amenable to public requirements, a committee with statutory powers should be associated with the agent of the State-managed Railway.

V. N. MEHTA, I.C.S.,
Chairman, Board of Industries, U.P.



Leaders in Finance and Industries.



CHARACTER SKETCH OF THE MONTH.

Lord Northcliffe.

We take the following from Mr. A. G. Gardiner's well-known sketch of Lord Northcliffe in his book *Priests, Prophets and Kings* :—

I was talking one day in the garden of a friend of mine on the subject of Stevenson, when he brought forth a file of *Young Folks* for 1881, in which appeared the "Black Arrow". Turning the yellow pages, he casually pointed to an article, one of a series, on "Amateur Photography."

"There," said he, "are the modest beginnings of greatness. To-day the writer of the humble article is master of the *Times*, a member of the House of Lords, owner of half the papers you see in the hands of the people, the Napoleon of the Press, whether you like it or not, the most influential man in this country." For the name under the article was "Alfred C. Harmsworth." "How has it been done?" he asked. "What manner of man is this Lord Northcliffe?"

"I have," I said, "the privilege of not knowing Lord Northcliffe. I am that miracle in these days a journalist who has never been through his mill, never written a line for him, nor met him, nor, except when he has been in the Peer's Gallery of the House of Commons, even seen him. I am therefore well qualified to answer your question, for I can view him without any personal emotion, which I believe, is a rare thing in a journalist. Lord Northcliffe is the type of 'the man in the street.' There is no psychological mystery to be unravelled here, no intellectual shadow land. He is obvious and elementary—a man who understands material success and nothing else. He has no other standard by which to judge life. Napoleon's question was 'What have you done?' Lord Northcliffe's question would be, 'What have you got?' For he not only wants success himself; he admires it in others. It is the passport to his esteem. It is the thing he understands. If you will watch his career you will see that, as far as he has a philosophy at all it is this, that merit rides in a motor-car. You become interesting to him, as Johnson became interesting to Chesterfield immediately you have succeeded. When he went down to that memorable meeting at Glasgow at which Mr. Chamberlain formally opened his fiscal campaign, he changed his policy in a night. His papers had been full of denunciations of what he had christened 'the Stomach Tax'; but this meeting, so great and so enthusiastic seemed the passage of success. He was going to be left in company with that dismal thing, failure. The thing was unthinkable, and he leapt the fence on the instant. For he believes with Mr. Biglow that,

"A merciful Providence fashioned us hollow, in order that we might our principles swallow."

The one principle to which his loyalty never falters is to be on the side of the big battalions. "This habit of swift decision, dictated without regard to principle, is the key to his success. He carries no intellectual or moral impediments, has no sentiment, is subject to no theory, holds no view of life. He simply asks, 'What will win?' and then, to quote Mr. Biglow again, 'goes inter it bald headed'. He is, in a word the Stock Exchange man in the sphere of journalism. He represents the conquest of Fleet Street by Copel Court. Go on the Stock Exchange and you will find it crowded with Lord Northcliffe's men of that rapid decisive type who bull and beat with happy indifference to intrinsic merit, and to whom the issues of peace

and war are of importance only as they affect the price of stock and shares.

"When Lord Northcliffe set out to feed the war flame in South Africa, he did so, I think, without any real feeling against the Boers. He is not, I fancy, a man who bears malice. For to bear malice involves attachment to some point of view, indicates some reality of character. Had the Boers won, he would probably have written them a letter of congratulation. But the mood of the country was high and turbulent. We were full of

"Such boasting as the Gentiles use,

And lesser breeds without the law."

And his conception of journalism is to give the public the meat it craves for. If it wants a war, then it is his duty to paint the enemy black and horrific; if it wants a sensation, then it is his task to provide it. Does the temper of the moment demand the immolation of France, then he is the fiercest of Francophobes.

"If the French cannot cease their insult (he says in 1899), their Colonies will be taken from them and given to Germany and Italy. The French have succeeded in thoroughly convincing John Bull that they are his inveterate enemies. England has long hesitated between France and Germany. But she has always respected the German character, whereas she has gradually come to feel a contempt for France. Nothing like an *entente cordiale* can subsist between England and her nearest neighbour."

Does the mood change and Germany become the object of national suspicion, then who is ready to throw faggots on the flame.

"Yes, we detest the Germans and we detest them cordially (he says in 1903). They render themselves odious to the whole of Europe. I would not tolerate that any one should print in my journal the least thing which might to-day wound France; but, on the other hand, I would not like any one to insert anything that could please Germany."

"He bolts out the foolish word 'consistency' from his bright lexicon and repudiates his yesterdays with fearless indifference to criticism. He knows that the mob has no memory and only asks for its daily sensation with its daily bread. And so in the midst of the Great German panic, his newspapers made our flesh creep with their revelations of Germany's designs, and Mr. Robert Blatchford was engaged to reduce us to the last pit of fear. Then the mood of the public being exhausted, he turned and slew the monster of his own invention. He went to Berlin, and from thence sent to his paper a sublime reproof of our silly behaviour, and told us that all Germany was laughing at our panic-stricken folly. Such agility leaves one breathless.

"He, in fact regards himself simply as the purveyor of a popular commodity. If the public taste changes, then he is the man to change with it, for he is wedded to no old clothes. He is truly considered a humble-minded person. His opinions are of so little consequence that he is always prepared to adopt those of other people, provided that they represent the majority. In 1904, when the progressives looked like winning, he supported them; in 1907, when they were certain to lose, he filled his papers with fantastic stories of their misdeeds. It was not that he disagreed with them, for disagreement implies convictions of some sort. It was simply that he was with the crowd. He backs an opinion as he would back a horse—because he believes it will win. He reminds me of the story of Lord Chancellor Thurlow and the Non-conformist deputation that went to him

to protest against some unjust advantage he had given to the Established Church. 'Why, asked the deputation, 'do you always show this partiality of the Established Church?' 'I show partiality for the Established Church?' said Thurlow, 'because it is established. Get your sect established and then I will show partiality to you.'

"It is this absolutely commercial conception of journalism which is Lord Northcliffe's contribution to his time. Journalism was a profession; he has made it a trade. It had a moral function; in his hands, it has no moral significance than the manufacture of soap. The old notion in regard to the newspaper was that it was a responsible adviser of the public. Its first duty was to provide the news, uncoloured by any motive, private or public; its second is to present a certain view of public policy which it believed to be for the good of the State and the community. It was sober, responsible, and a little dull. It treated life as if it was a serious matter. It had an antiquated respect for truth. It believed in the moral governance of things.

"Lord Northcliffe has changed all this. He started free from all convictions. He saw an immense unexploited field. The old journalism appealed only to the minds of the responsible public; he would to the emotions of the irresponsible. The old journalism gave news; he would give sensation. The old journalism gave reasoned opinion; he would give unreasoning passion. When Captain Flanagan, from the calm retreat of the debtors' prison, was drawing up the prospectus of the *Pall Mall Gazette*, he said proudly that 'it would be written by gentlemen for gentlemen.' Lord Northcliffe conceived a journal in which Lord Salisbury's phrase was 'written by 'office-boys' for 'office-boys.' It was a bitter saying; but Lord Northcliffe has had his revenge. He, Lord Salisbury's 'office-boy' of journalism, was raised to the peerage by Lord Salisbury's nephew.

"It was not the only case in which time passed an ironic comment on Lord Salisbury's views on the Press. When Gladstone repealed the stamp duty and made the penny paper possible, Lord Robert Cecil asked scornfully what good thing would come out of a penny paper. 'A cheap press, like an enlarged franchise, meant to his gloomy and fatalistic mind red ruin and the breaking up of laws.' And he lived to see himself kept in power by the democracy which he had feared, and deriving his support from the half-penny press, at which he would have shuddered. He lived, in fact, to realize that there is a better way with the office-boy than to drive him into revolutionary movements. It is to give him a vote and the *Daily Mail*.

"I have said that Lord Northcliffe is the man in the street that is, that his mind is always in tune with the mood of the populace. You see it in this article in *Young Folks*. Amateur photography had just become popular. He, a lad of eighteen, seized on it as a stepping-stone to fortune. A little later came the boon in cycling, and Master Harmsworth, still in his teens, became a cycling journalist in Coventry. Sir George Newnes had touched the great heart of humanity with *Tit-Bits*, and Mr. Harmsworth, now a man of twenty-one, felt that here was a field for his genius also. He, too, would tell men that the street of London, put end to end, would stretch across the Atlantic, and that there were more acres in Yorkshire than letters in the Bible. Why should he conceal these truths? Why should the public thirst for knowledge be denied? And so in an upper room in the neighbourhood of the Strand *Answers* came to birth, the prolific parent of some hundred, or, perhaps two hundred.—I am not sure which—off-springs, ranging from the *Funny Wonder* to the *Daily Mail*, all bearing the impress of the common mind in an uncommon degree, the freedom from ideas, the love of the irrelevant and the trivial, the admiration for the flagrant and the loud, the divorce from all the sobrieties and sanities of life. The fate of the *Times* was long, in doubt, and the secret of its new control was carefully concealed. But one day it appeared with

several columns describing the dress at some society 'function,' 'Lady Midas' wonderful creation from Worth's, and the Dutches of Blankshire's rapturous pearls, and I knew the touch of the master-hand. The marvellous 'office-boy' had no more worlds left to conquer.

"Perhaps the crucial movement of his life was that day in the early nineties, when a young man who had been a reporter on the *Birmingham Daily Mail* and afterwards on the *Sun* called on him with a scheme. The *Evening News* was for sale, and the enterprising young man had got the refusal of it and gave Mr. Harmsworth twelve hours to decide whether he would buy it, his own reward being the editorship and a sharer in the business. So far Mr. Harmsworth had only adorned the sphere of 'Tit-Bit' Journalism. He seized this opportunity to serve his country in a large sphere, and out of that day's work came the *Daily Mail*, with which the ideals of American journalism were brought into our midst, and all the multitude of daily papers with which he has endowed us. He is, you see, a man of bold and swift decisions. When he found the woman did not want a woman's daily paper, he changed it in a night into a half-penny picture paper. And instantly he found his way to the feminine heart. He is doubtful whether women want votes; but he discovered that they do want pictures, 'stuck in anyhow, with hardly any words at all.'

"He has adroitness too. When the *Daily Telegraph* started a Sunday issue, he followed suit. Instantly there was a great outcry in the country against the Sunday newspaper. To that outcry, Lord Burnham and Lord Northcliffe bowed with grave professions of respect for religious opinion. Subsequently, Lord Northcliffe purchased two Sunday papers already existing, and nothing was said, though we may assume that Lord Burnham thought good deal. There are few earlier birds about than Lord Northcliffe.

"He touches nothing that he does not—shall we say—adorn. The note of his mind is over all he does. I was looking the other day at one of his multitudinous publications—a children's cyclopædia. It contained a picture of the solar system the sun blazing in the centre and the planets careering round it. And each planet was depicted by a motor-car! He can make even the splendours of the midnight sky speak in the terms of the momentary and sordid earth. No doubt the men sitting in those motor-cars were reading the *Daily Mail*. I am told that in his office he has a favourite phrase about the 'shop window'. 'What is wrong with the shop window to-day?' he will say as he points to the offending issue. It is an eloquent phrase. He is the "shop-window" journalist. The sign over the journalist's office in the old days was 'Marchand d'idees.' Now it is 'The Latest Novelities', and the editor is the chief shop walker. Is your mood for conquest? Then here is the material to feed your hate or your fear of the foreigner. Is health the craze of the moment? Then 'Standard Bread' becomes a gospel more urgent than the Decalogue. Are you tired of panics and in need of nature's balm? Then the shop window is aflame with sweet peas and we are all turned out into our gardens to engage in a feverish competition for the finest blooms and the biggest prizes. He is all that is summed up in that desolating word 'smart'. He is a 'smart' man, the representative man of a 'smart' age. It is an age which, if it has ever heard of Lord Courtney, regards him only as a dull old gentleman who bores you with talk about principles. It delights in the man who will advertise himself in twelve-foot letters. It worships success, however it is achieved. You may be exposed as often as you like: all will be forgiven if you will be smart. You may espouse one cause to-day and another to-morrow, one cause here and another there; it does not matter so long as you do it with effrontery and success. And its patriotism is that strange, inverted thing which makes 'Little Englander' a phrase of withering reproach, as though to love England were impious.

"It is not that it believes the wrong things. It is that it has ceased to believe anything. Its drama

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Agriculture in Burma, 1920-21.

By "Rusticus."

It is gratifying to our pride to find that our columns are so closely studied in Burma. Thanks, we feel certain, to Mr. Mackenna, the Development Commissioner, to whose work in improving the agricultural publications of the Government of India we have frequently paid tribute, the suggestion we made last year that the Burma Agricultural Report should contain a map showing the division of the Province into agricultural circles, the location of the farms and the principal crops grown in each district has been acted upon. We trust that the example thus set will be followed by other Agricultural Departments, for the value of the map, which shows not only the existing agricultural circles but also those which are proposed and not only the central demonstration farms but also the minor experimental farms and the district demonstration farms, is very great. On the map are also shown the occupied area in each district in the year under review and the acreage with the name of the principal crop. On the page opposite it are given the net area sown in each district and the acreage under all the important crops where this exceeded 2,500 acres, with totals for 1920-21 and 190001. This statement is most interesting, for it illustrates both the striking agricultural development and the immense potentialities of Burma. In the twenty years, the net area sown has increased by about $3\frac{1}{2}$ million acres or very nearly 30 per cent.

Mr. Mackenna's review of the Report which is written by Mr. Clague, the Director of Agriculture, reminds the reader of Hamlet's remark "Look on this picture and on that." This picture is of an Agricultural Department handicapped by lack of staff, by constant changes in personnel and by the absence of proper means of training an efficient subor-

dinate staff in the Province itself, in short, of a Department engaged in a constant struggle to cope with a task entirely beyond its powers. That picture is of a Province divided into eleven agricultural circles (instead of three as at present) and 44 agricultural districts, with a member of the Imperial Agricultural Service in charge of each circle assisted by a member of the Provincial Agricultural Service. An experimental and demonstration farm will be located at or near the headquarters of each circle and there will be one or more seed farms in each agricultural district. Members of the upper division of the subordinate service will be in charge of these farms and will be assisted by two members of the lower division of that service and two fieldmen. For the training of the Provincial and subordinate services there will be a College with a staff of six Imperial and eight Provincial officers and twenty-three members of the subordinate service. For this picture of a Province in which the energies of the small staff are often dissipated in complying with the demands of district officers intent only on the needs of their own districts and, with the best motives in the world, incapable of envisaging the agricultural problems of the Province as a whole will be substituted that picture of a Province in which agricultural development proceeds on orderly lines. Nothing could be sounder than the lines of progress Mr. Mackenna lays down for that development. Improved types will be evolved on the experimental areas of the central farms. Seed of the improved types will be produced in bulk on the outside areas of the farms whilst a series of seed farms will radiate out from the central farms, the produce of which will be sold to the cultivators in the locality, the annual seed supply for these

seed farms being provided by the central farm. Finally, Mr. Clague and Mr. Mackenna have a vision of a Burma in which agricultural conditions will differ as widely from those of the present day as does the Agricultural England of the twentieth century from the England of the eighteenth. Their vision is of a Burma where the cultivator lives in his own homestead in the middle of his fenced in fields, where cattle disease is no longer rife as the promiscuous grazing to which it is mainly due has been ended and where the tenant has security of tenure and consequently an interest in improving his land. Such is the reality and such is the possibility. It may be long before the possibility also becomes the reality, especially if the recruitment of superior officers proceeds no more rapidly than it did in 1920-21 but we feel that foundations are being well and truly laid by Mr. Mackenna and Mr. Clague and that, to vary the metaphor, the Burma Agricultural Department is at last emerging from the slough of despond in which it has floundered ever since its formation in 1906.

It must not be thought, however, that the Department has been sterile in achievement. Rice is by far the most important crop of the Province, covering as it does two-thirds of the net area sown, and it is to rice, therefore, that the Department has devoted the largest share of its attention. At the Hmawbi farm near Rangoon no less than 600 varieties are under close observation. Several of the selected strains, with names unfamiliar to us on this side, the Bay of Bengal, such as Letywezin B106 and B107, Ngachima, Ngasein 10 and Emata A34 are being multiplied and over 8600 baskets of selected seed were distributed. At Mandalay, the centre of the work on paddy for the irrigated tracts of Upper Burma, the advantages of thin seeding and light planting have been as amply demonstrated as they have been in Madras and the planting in doubles which saves 50 per cent of the seed as compared with the local methods is now the standard practice on the Mandalay farm. At Hmawbi, the experiments in this direction have proved inconclusive. It would be interesting to know why and also whether the methods adopted on the Mandalay farm have made any progress amongst the cultivators in the neighbourhood.

In the dry zone of Upper Burma, sesamum is the principal crop though its predominance is far from being as pronounced as that of paddy in Lower Burma. 185 types have now

been isolated but much work will have to be done before the distinct varieties can be catalogued and it will, therefore, apparently be some time yet before the Department is able to give out improved seed.

In our notice of the Burma report last year, we mentioned that the researches of the Agricultural Chemist had shown that the Burma bean could certainly not be acquitted of the charge of containing prussic acid. Experiments last year were directed to the selection of types containing a low prussic acid content and to the discovery of the changes which occur in that content when the beans are stored. These met with a fair measure of success for five strains were discovered, the multiplication of which will give beans of which the bulk supply will be perfectly safe and which will, with reasonable care, keep below the danger mark for a long period.

It is worthy of mention that the amount of prussic acid allowed in beans for importation into Canada is .02 per cent whereas none of the samples from these strains had a higher prussic acid content than .0069 per cent and most of them had less than .003 per cent. In spite of this, we cannot but think with Mr. Mackenna that beans from Burma should, like Cæsar's wife, be above suspicion and that the energies of the Department would be better employed in looking for a bean entirely free from prussic acid which can be substituted for *Pebyugale* with its distinctly tarnished reputation.

It is disquieting to find that the water-hyacinth has become a more serious pest in Burma than even in Bengal. There is a disease known to doctors as sclerosis or hardening of the tissues. The waterways of Lower Burma are its tissues and, if they are choked by the water-hyacinth, the end will be the same as when the human frame is attacked by sclerosis. Mr. Mackenna is evidently greatly impressed by the urgency of the problem which is being attacked in two ways, mechanically and scientifically. The mechanical method of dealing with it is to construct booms across rivers and creeks in order to collect the weed in large masses and to dispose of it by getting it into channels which will lead it out to sea, though it does not appear that it has yet been definitely established that salt water kills it. The scientific method is to discover a non-poisonous spray which will kill the plant—but nothing else—at not too heavy a cost or, better still, to discover the way in which the water-hyacinth reproduces itself with a view

to controlling its propagation. The scientific method is likely to prove far more efficacious than the mechanical and it is to be hoped that, in his next report, Mr. Clague will be able to report substantial progress.

Cotton is a crop of some importance in Upper Burma where the area under it has increased from 154,500 acres in 1900-01 to 365,500 acres in 1920-21. We need hardly remind our readers that Mr. Mackenna was President of the Indian Cotton Committee and it is not surprising, therefore, that every effort has been made to carry the recommendations of that Committee into effect in Burma. A Provincial Committee has been formed to promote the development of cotton cultivation in every way. Cambodia cotton is making headway, especially in Monya district where the half acre under it in 1919 increased to 70 acres in 1920 and where seed for 500 acres in 1921 was distributed. The results have been distinctly satisfactory to the cultivator for his produce realized Rs. 35 for 360 pounds against Rs. 15 for the ordinary local varieties. We notice that a selected strain at the Tatkon farm has the extraordinary high ginning percentage of 47.99. This strain thus produced nearly the same weight of lint as seed. It would have been interesting to know the length of its staple but this is not given.

Some variety of cropping is undoubtedly desirable even where climatic conditions are as overwhelmingly in favour of paddy growing as they are in Lower Burma. But, whilst it is difficult to imagine any change in circumstances which will appreciably affect the predominance of that crop, it is as well to remember that sugarcane, the staple crop of Eastern Java, was once nearly wiped out by disease as was the potato, the staple crop of Ireland. It is improbable that such a calamity will ever befall the paddy crop of Lower Burma but it is not surprising that the Agricultural Department should desire to investigate the possibilities of other crops in the Delta districts. These investigations have not gone very far for, though the experiments in the cultivation of jute have shown that jute of good quality can be grown in Lower Burma, difficulties about marketing the produce and also in regard to labour militate against its cultivation. None the less, the conclusion that extension of jute cultivation can only come about gradually from imitation of Indians who may take up the crop and by the provision locally of facilities for its manufacture seems a tame one. Surely, if the Government

were to do something towards the provision of the manufacturing facilities, the imitation of Indians would not be such a slow process after all. It is hopeless to expect cultivators to grow a new crop unless a market for it is provided. It may be argued that it is equally hopeless to expect a market unless the crop is grown but, in the conditions of Lower Burma, this vicious circle will not be broken except by Government action. The second string which Lower Burma has to its bow is provided by the coconut. Here again, but little progress has been made for the Burma Government has not so far succeeded in securing the expert help which they had hoped would come from Mr. Sampson who has done such excellent work on the coconut in Madras. Mr. Mackenna is of opinion that development must proceed on capitalistic lines but that this would also benefit the small grower who often at present has a difficulty in securing a market for his produce.

It only remains to add a few words regarding sugarcane. The Indian Sugar Committee were greatly impressed by the possibilities of Burma as a cane-growing country but were careful to state that it was solely from the point of view of possible future developments that Burma was important. Only 24,700 acres were under cane in Burma in 1920-21 but even this area, small as it was, was nearly twice as large as the area in 1900-01. It seems likely to expand rapidly in the near future for Mr. Clague says that the Department is no longer able to meet the demand for sets for planting. It is most desirable that the right canes should be grown and it is to be hoped that every effort will be made to give the cultivators what they want even if an enlargement of the farms is necessary for this purpose. Mr. Clague mentions that there is a prospect of white sugar factories being opened in the Insein, Mandalay and Myitkyina districts. It is very curious that these districts should have been selected for sugar factories as, in none of them does the area at present under cane reach 2,500 acres. Mr. Clague might well have explained how the proprietors of the factories propose to obtain sufficient supplies to keep their concerns going. Information on this point would have been of interest and value to Provinces in India proper where, as the Report of the Sugar Committee shows, it is often, owing to the competition of jaggery, very difficult to keep a factory alive even in localities where cane supplies would seem plentiful enough.

Debts after the Napoleonic Wars.

Now that the question of post-war debts has attained such importance as a factor in the international trade situation it may not be inopportune to draw attention to the attitude adopted by England towards her allies during the wars against the French Republic and Napoleon between 1793 and 1815. From a consideration of England's policy towards her allies during these wars, and her method of dealing with her principal debtor, Austria, at the conclusion of peace, it is not improbable that some points of direct interest at the present time may emerge.

Until the late war England had never in modern times raised a truly national army, so that in the course of her wars in the eighteenth and the early part of the nineteenth centuries she was obliged to attract and retain Continental Allies by means of subsidies. In this way she was able to keep the main energies of her foe engaged in Europe while concentrating her own man power on the fleet and the defence of the colonies. The policy of giving subsidies as distinct from making loans became almost traditional. The twenty years from 1793, however, formed a transitional period, and in this lies the value of a study of our policy at that time. They were transitional in that during the earlier years England occasionally granted money by way of loan, chiefly to the power which since 1806 has been called Austria. After the downfall of Napoleon the Austrian debt remained for settlement. The table in the next column shows all sums of money paid or advanced by way of loan, subsidy or otherwise, to any foreign state from 1793 to 1816, the total reaching the then considerable amount of £58 millions. Of this total about £7 millions were advanced by way of loan to Austria, in 1795, 1797 and 1800. The circumstances in which these loans were raised and finally settled are particularly interesting. In 1795 Austria received from the English Government a loan amounting to £4,600,000. By a treaty of May 4, 1795, Austria agreed to raise £3 millions from the English public and to repay the sum due to the Government in equal parts in November and December. One part of this loan was to be issued as bonds, at the rate of £60 cash for £100 bonds, with interest at 3 per cent per annum, the remainder of the loan taking the form of annuities in full satisfaction of principal and interest. The English Government undertook to guarantee

the regular payment of interest. This loan appears to have been raised from the English public, but the English Government apparently became liable on its guarantee and failed to secure repayment of the £4,600,000 lent.

ADVANCES BY GREAT BRITAIN TO ALLIES, 1793-1816

	Austria	Prussia	Russia	Other Countries	Total
	£	£	£	£	£
1793	..	..	..	833,274	833,274
1794	..	1,226,495	..	1,323,750	2,550,245
1795	4,600,000*	..	..	1,124,961	5,724,961
1796	..	..	..	32,870	32,870
1797	1,620,000†	..	..	64,586	1,684,586
1798	..	..	..	127,014	127,014
1799	..	..	825,000	24,813	849,813
1800	1,066,667	..	545,494	1,001,017	2,613,178
1801	150,000	..	..	490,114	640,114
1802	..	..	200,000	85,451	285,451
1803	..	..	63,000	149,275	212,275
1804	..	..	..	103,423	103,423
1805	..	..	..	35,341	35,341
1806	500,000	..	..	95,847	595,847
1807	..	180,000	614,183	64,899	859,082
1808	..	..	..	2,897,873	2,897,873
1809	850,000	..	..	1,729,039	2,579,039
1810	..	..	..	2,110,543	2,110,543
1811	..	..	..	2,367,413	2,367,413
1812	..	..	..	3,908,521	3,908,521
1813	500,000	650,040	657,500	4,978,482	6,786,022
1814	1,064,882	1,319,129	2,169,982	3,888,584	8,442,577
1815	1,796,230	2,294,222	3,241,919	2,692,359	10,024,730
1816	..	..	1,096,356	756,439	1,852,665
Total	12,147,779	5,669,886	9,413,434	30,885,788	58,116,887

*Imperial Loan, 35 Geo. III, C. 93.

†Imperial Loan, 37 Geo. III, C. 59.

The table shows a further sum of £1,620,000 borrowed by Austria in 1797, and in May of that year a convention was made by which a similar sum was to be raised from the English market by Austria for the repayment of the English Government. The subscribers were to make their payments direct to the British Treasury, receiving from the Austrian Government 3 per cent bonds at the rate of £226 10s. bonds for £100 cash. The British Government again undertook to guarantee interest payments. This convention, however, was not ratified by Austria until February 21, 1800, and its execution seems to have been prevented by the defeat of Austria by France at Hohenlinden a few months later, and the armistice which followed. In June 1800 England agreed to advance Austria £2 millions by way of loan, in three equal instalments, but apparently payment of the second instalment had not been completed before Austria collapsed at

Hohenlinden. This loan was to bear no interest until six months after the war.

Outside the loans to Austria the sums borrowed by allies were quite small, and the balance of the advances, amounting to about £50 millions, were all given by way of subsidy. After 1815 the question of repayment to the creditor country arose. Including dividend payments made by England in accordance with her guarantee and interest thereon, the total due in respect of the Austrian loans of 1795 and 1797 had increased by 1817 to nearly £19½ millions. The problem that had arisen, therefore, was essentially the same as that which exists to-day, *viz.*, the settlement of debts incurred in the common cause by a financially weak ally. For twenty years Austria's resources had been strained by intermittent war. Her total debt had increased three-fold, and the treasury was driven to raise money by means of forced loans. In these circumstances agreement was finally reached by a convention of November 17, 1823, by which, after a preamble reciting that both countries were equally desirous of coming to a definitive agreement upon the subject of the Austrian loan, and of cancelling the whole debt, Austria agreed to pay £2½ millions in satisfaction of the whole of the British claims upon the Austrian Emperor under the head of the Austrian loan, and England agreed to deliver up the securities held. By article IV each country reciprocally released claims on the other. The total due at the time of this convention must have been well over £20 millions, the extent of the remission thus probably amounting to over 90 per cent of the debt. Austria met her liability under this convention by borrowing the agreed amount from London bankers.

If attention is now directed to the present situation with regard to inter-allied debts it will be seen that a very similar problem to that which existed a hundred years ago has arisen, although, of course, additional complexities have been introduced by the position of England as both a debtor and a creditor nation. During the period from 1793 to 1816 England financed her allies to the extent of £58 millions. Of this amount subsidies accounted for about £50 millions, not a single penny of which was repaid or intended to be repaid, while the remainder consisted of loans, mainly to Austria. It was a comparative by simple matter to reach an agreement with Austria as to the settlement of her debt, although even this took eight years from the signing of peace. The settlement of the present debt

problem, however, cannot be such an easy matter in view of the many conflicting interests which may arise in an adjustment of claims between the United States, England, France and other countries. As a combined result of the war and the Peace Treaty Germany has a huge external debt in the form of an indemnity, England owes money to America and the Continental Allies are indebted to both England and America.

It is obvious, from our experience of a hundred years ago and to-day, that when loans are made to allies for the purpose of a long and exhausting war doubt must always subsequently arise as to whether the lender should insist on strict repayment since the money was advanced for a common purpose. Whether that doubt is justified as regards the present situation is a moot point. The position to-day is complicated by the fact that the United States is the only ally which is not a debtor as well as a creditor, and that the question of inter-allied debts has become inextricably bound up with a problem which in 1815 was entirely distinct, namely that of reparation on the part of the defeated. At the end of the Napoleonic Wars, although England's debt was nearly £900 millions, or more than four times as much as that of France, it was agreed that France should pay the equivalent of only £28 millions as an indemnity. This sum was considered too small by Prussia, which had contributed to Napoleon between 1806 and 1812 more than twice the amount by way of levy. As a consequence of this policy of moderation the indemnity was paid and England duly received her share of £5 millions. To-day, however, a policy of moderation has not prevailed. The victors have relied upon huge indemnities for reparation purposes, and the position is still further confused by the existence of the inter-allied debts incurred during the war. As a consequence the ultimate debtor, Germany, seeks a moratorium. The settlement, when and if it comes, will therefore have to deal with a much more complicated series of claims than existed a hundred years ago, and the reconciliation of justice and expediency will be correspondingly difficult.

An Alexandria Correspondent states that French capitalists are endeavouring to form a company to operate in Egypt with a capital of £3,000,000, for the purpose of weaving from Egyptian cotton to supply the local market with cotton goods.

University Culture in India.*

By The Rev. W. Meston, M.A., B.D., M.L.C.,

Principal, Madras Christian College, Madras.

Through what I cannot but regard as the too generous trust of His Excellency the Chancellor, it now falls to my lot to address to you a few words before this day, so memorable to your lives, draws to a close. There is but one consideration that encourages me to discharge this trust for which I have otherwise so few qualifications. It is this: For well nigh a generation I have been among you as a teacher, and a teacher is always a student. I am therefore one of yourselves. With you in your long struggle I sympathize, in your achievement I rejoice, and in your hopes for the future I share. Yet, though in the infectious enthusiasm which radiates from you, the barriers of time seem to be broken down, and there membraunce of a similar day long ago becomes reinstated with a vividness which makes it almost a present reality, the years still persist in keeping their jealous guard. They serve to remind us, as your teachers, of the privilege which we have enjoyed as we have been brought into such intimate contact with you at a time when the pulsation of life has been more rapid and more strong than perhaps at any previous time in the centuries of your nation's eventful story. And they serve to remind us, as your friends, of the happy relations which have existed between us as, in our common work, differences of race, and faith, and tradition have slipped away, and day by day we have companied with you on the journey of life, contemplating its demands and seeking to prepare a worthy response. And now the crown of our teaching and fellowship is reached; we step aside, and you fare forth by yourselves into a future of splendid promise, to a destiny as magnificent as it is momentous.

To-day you are enrolled as citizens of no mean city; you have become graduates of this University which compensates by prestige for what it lacks in age. Behind you lie years of toil, disappointment, success and sacrifice. All these have gone to your making, and you now are clad for a little in these academic robes as the outward expression of a definite inward conviction that, however small may be the material reward, culture has a value that is imperishable and a worth that is indispen-

sable. You don the graduate's gown to proclaim yourself learning's under-graduate. In a world full of action, change, bustle, competition as never before, you remind yourselves and remind yourselves rightly, that the cultured mind is a garden enclosed, that the owner of it is master of a kingdom, that the user of it is builder of a people.

But the culture which has these results, and which you have in some degree imbibed, is being subjected to a never-ceasing test, and it is as ceaselessly holding out to you its challenge. Every year will convince you of that. But there is good reason why this very year in which you graduate should bring home to you the vital test of culture, and face you with its inescapable challenge. For, this year is marked by three memorable events, each one of which is also a departure. It has witnessed the beginning of compulsory education in our presidency; it has witnessed the beginning of a serious attempt to relate academic pursuits and our higher training with the larger and more practical interests of the country; and it has witnessed the beginning of a definite endeavour to make the interests of the country coincide with the ever-widening interests of the self-governing Dominions of the Empire. And all these events, all these departures, are associated with graduates of this University. The connection is not fortuitous. It serves only to make the note of challenge clearer and more incisive. Let us listen to each of these notes of challenge as it rings out to-day.

I

What is the culture of the University to say to the great masses of the people to whom knowledge is a closed book? The illiterate is at the mercy of prejudice, passion, distortion, bias. He can be swayed by the clever schemer; he can be down-trodden by the clever exploiter. He has not the power to enrich the country by judgment and wisdom; always potentially, and at times in reality, he is a slave. When we look through the reports of the Director of Public Instruction there are pages where our hearts fail us. What mean these tables setting forth in cold figures percentages of children attending School, villages possessing no School, the time spent by children at school? They mean that there

*Address delivered at the Madras University Convocation, 1922.

are millions of men and women in this land with faculties such as our own who have been shut out from the great and magic realm of knowledge in which we walk with freedom, men and women who have drunk so little of wisdom's stream that the taste of it has no sweetness for them. They mean that there is going on a steady depreciation of the most splendid resources of the country, a weakening of the foundation on which national honour and power are built. And now it has been said at last that this shall not be; this waste must cease; this slavery must be fought till freedom's trumpet rings. It is a heartening call to every one who takes his or her degree this year—this note of jubilee. This great fight is not to succeed without you. Knowledge to your eyes has unfolded her page and you—you cannot keep it to yourselves. You must unfold that page to others. By personal influence, by practical interest, by membership of local boards, by the employment of your means when the days of prosperity come—by these methods you can spread education not because the law compels it, but because conscience, your quickened, educated conscience, compels it. In the elementary School lies the hope of the nation. In that School, its pupils often ill-clad and poorly nurtured, its teachers finding it hard to keep the wolf from the door, its habitation often far from satisfying the most meagre educational demands, in that school there is being made or marred the greatest factor in our national wealth. We have an abiding regard for our Motherland. Here is her primary appeal. This year she makes it with a note so loud that every ear can hear. Here is a field which demands the exercise of interest when interest may not be returned, which calls for steady effort when reward seems long in coming, which asks for resources when there is all too little of them; here is a field which has opened up a special opportunity for every man and woman on whom the University has set its hall-mark. In the enthusiasm of this day, when resolutions are made which will be fulfilled in the common place days to come, let your determination be taken that the call to this cause will find you its life-long champion. Then in these days, when they do come, men and women will rise up in their emancipation and self-respect to bless you for a test which your University education has worthily stood for a challenge which you have truly answered, and for a battle which you have nobly waged.

II

What is the culture of the University to say to the movement ever gathering in volume which seeks to connect the pursuit of learning with the realm of the practical? Signs of that movement are seen in proposals to provide our University with a new constitution so that its governance may be in the hands of those concerned with the wider activities of life as well as of those whose interests are mainly academic; in the proposals to increase the number of our Universities and to extend the range of their curricula so as to make those who undergo them more effective combatants in the battle of life; and in the proposals to remodel the whole of our secondary education so that each pupil may see a closer connection between the knowledge he acquires and the activity which it is calculated to promote. Here then is a test and a challenge. Are our Universities to become merely technical and commercial schools? Is there usefulness to be judged simply by the industries they stimulate, the professions they fill, the hard cash they enable their graduates to amass? To these questions there can be but one answer. The University exists as a home of culture. What does that answer imply? There are three out of the many implications which must be mentioned here. First, the University trains men and women to think and to take pleasure in thinking. During your college course you have learned to accept facts, because they were facts, to think things out of yourselves, to enjoy the attractive if unfamiliar avenues which clear thinking discloses. So it is that when from the calm atmosphere of the University you emerge on the dusty high road of life, you are men and women who can take your bearings, form judgments, avoid prejudices. Second, the University trains men and women to take a wide out-look; it humanizes. Thus it is that when you exchange the experiences of the University for those of life you bring to bear on them a widened sympathy, a mental refinement, an almost intuitive attraction to the things that are excellent. And third, the University through the discipline it affords trains men and women to work. It begets in most of them a habit of work, in many of them a real love of work. Thus it comes about that when you leave your college days behind you, you appear on the stage of life as trained workers.

If your University then has been to you a home of culture in which you have lived, and the spirit of which you have breathed, it has

performed this great service for you ; it has given you insight not dreams, it has guided you to be a thinker not an empiric, it has made you a worker not a machine. And when the business man realizes that this is what the University does, that it sends forth men and women who take long views, who keep their minds open, who get to the roots of things, who can apply to another field the skill which they have acquired in a totally different field, who work because their work is the hand maid of thought, and who think so that their thought is dynamic, he will then be in no doubt as to the value of the culture which a University imparts. And so it will come to pass that men who have never enjoyed the advantages of a University education will be the first to seek to place these advantages within the reach of others. They will deliberately employ the resources at their command for the establishment and equipment of Universities as autonomous bodies freed from financial anxiety and reared in effectiveness until they have their place among the most vital forces in the Presidency. And through this enrichment, the Universities, by their inherent power to connect the realm of the mind with the realm of the practical, will supply the country with those who can set the problems of the time in the clear light of ordered knowledge, who will stimulate the research which will make industrial development possible, and who will spread the culture which will keep that development free from human exploitation. What is to hinder the University of Madras from becoming the real *alma mater* of a South Indian Jamshedpur ?

That our Universities are capable of being at once homes of thought and centres of thoughtful activity there can be no doubt. Within the territorial limits of the University of Madras there are minds to make them such, and resources to keep them such. Will they become such ? The answer to this challenge lies in great part with you, the graduates of the University. You have imbibed in part that culture. Nourish it, tend it, scatter it. And in each place where you scatter it there will rise the fair flower of your country's weal.

III

What is the culture of the University to say to the wider relations into which this land, in common with so many other lands, is being brought through the expanding times in which we live ? It is not a matter of chance that one of our own graduates, a former Fellow of

this University, one who is now a Privy Councillor, should be engaged at this time on a mission from this land to the self-governing Dominions of the Empire with the twofold purpose of strengthening the bonds between this land and these Dominions, and of at the same time strengthening this land for a similar destiny. There is something which is peculiarly congruous in this, for it is of the very essence of a University that it should assert a catholicity of interest, aim, and purpose which runs far beyond the confines of one's own country and links it with other countries in a community of culture which as it binds uplifts, and which as it enlightens reconciles. Thus it is that a challenge is being sounded out to all graduates not only to unite in reclaiming the millions of this land from ignorance, not only to unite in bringing their culture to bear on the practical fabric of our life, but also to unite in making their culture one of the greatest humanizing factors that are at work on the face of the globe. And that challenge you will be able to answer without fear if you have learned the greatest lesson which your University days have taught you. They have taught you to think, they have taught you to work, have they taught you to live ? In a recently published biography of Queen Victoria there is an arresting analysis of the character of the Prince Consort. It gives us the picture of one with whom work became an insatiable passion, but to whom at the same time it brought a sense of missing his goal, a sadness and disappointment which impaired his health. Whence came this ? It was nourished if not engendered by aloofness ; though he was brought into contact with so many and in such honourable fashion his relations with them were characterized by little that was intimate and personal. It is a danger into which every student is prone to fall. You have spent much time over books, you have mastered facts, you have driven the mind along avenues of fairy texture and into realms of remote antiquity. But there is a still greater service that your University course has rendered you. It has brought you into contact with real men and women friends and opponents, those who are loyal to you and those who at a pinch will leave you in the lurch, those who think deeply and those who think as little as possible, the self-centred and the self-sacrificing, the generous and the jealous, the genial and the morose. For these four years at least you have been in contact not with an artificial world but with the real world

in miniature. You have lived, thought and mingled with others, giving and taking, exposing corners and getting them rubbed down, having crude opinions clarified, self-assurance modified, coming to respect opinions even though you cannot accept them, exercising tolerance without sacrificing conviction. You form your opinions but you have had to fight for them, you diminish your suspicion but you strengthen your judgment, you take longer to reach conclusions but they are juster when reached, you can enjoy a joke even at your own expense, you awaken to the amazing amount of goodness and sincerity and worth which there is in the world, and disillusionment and cynicism curl up like a scroll in the presence of men and women before whom you take off the shoes that are on your feet. This is what college life has done in some degree in the past; this is what, unless all reform is to be useless, it is to do in still greater measure in the future. And this is what it has done for you if you have suffered your college days to bring your own separate existence into contact with this fuller life that stretches on every side around you. By this contact you have become the channels of a wider sympathy, a finer tact, a firmer brotherhood, and a larger purpose—channels of a nation's refreshment, enrichment and exaltation.

IV

In such ways as these, then, ladies and gentlemen, you are reminded, by the events associated with the year of your graduation, of duties which devolve on you, tests which

await you, and privileges in store for you. Had I mentioned these only that I might stir you up to fulfil the increasingly greater and more dignified responsibilities which rest upon you as citizens of this land and Empire I should have but helped to recall you to one of the great ends which Universities are pre-eminently fitted to subserve. But I had another thought in my mind; for there is a greater thing than true citizenship, and that is true manhood and true womanhood. All the discipline of a college career, all the inspiration of an academic training, all the refining influences of University life—all these have been playing upon you during these years that in you there might be planted and grown to full fruition (as the days go by), that readiness of sympathy, that quickness of conscience, that firmness of conviction, that largeness of thought, that fulness of self-respect, that nobility of service, which give to womanhood its grace and to manhood its worth.

For though the Giant Ages heave the hill
And break the shore, and evermore
Make and break, and work their will;
Though world on world in myriad myriads roll
Round us, each with different powers,
And other forms of life than ours,
What know we greater than the soul?
And it is because, in the flush of youth and
with the sense of triumph fresh upon you,
you now set forth on the greatest of all quests
for this the greatest of all possessions, that in
the name of the University of Madras I bid you
most heartily God-speed.

The life of the village housewife in the Schwarzwald is a simpler affair than that of the village housewife in England. For there in the smallest and remotest spot where there is a dwelling place, electricity is used.

Think of the saving in time and trouble and cleaning! No candles, no smoking, smelling, troublesome oil lamps, no uncertainty of supplies; for the electricity is obtained from the water-power of the numberless mountain streams.

Here and there along the roads and by-ways one comes across huge pipes, gathering up and confining the rushing waters until, carrying enormous pressure, they reach the power station lower down the valley, to be released after they have served their purpose into a broad and gently flowing stream.

Some of these aqueducts are old, overgrown with moss and hidden under tangles

of flowers and weeds; others are new and show like scars on the hillsides.

All the waterfalls, including the show ones, are used to produce power. And here part of the torrent is secretly deflected to a powerhouse, discreetly hidden amongst foliage and behind boulders so that the attractions of the spot are not spoiled.

Hardly a village is without its street lights, and the effect, as one approaches a brightly lighted mountain hamlet after nightfall, fairylike, particularly when the lights of a bridge are reflected in the dancing waters of stream below.

An international exhibition of the photographic, cinematograph, and optical trades is being organized in Turin for the spring of 1923, under the initiative of the Turin Chamber of Commerce.

Permanent Vs. Long Term Assessments*

By Sir H. Butler.

I have been asked to place my views on land revenue settlement before the committee now sitting because the question will not come up to the Government before I leave the Province. The president of the committee desires to put them before the next meeting. I do not, therefore, delay them for more elaborate treatment. It will probably suffice to deal with important practical issues. A summary of the discussions which have taken place from time to time will be found in the historical summary of the provincial history which I wrote some twenty years ago and which was published as chapter 3 of the Report on Administration of the United Provinces of Agra and Oudh 1901-2. The question has now passed the stage of historical treatment and has become one of pressing political interest. Details of settlement are the possession of experts. Land valuation in every country requires special knowledge. But the principles of settlement are simple and suitable to general discussion and decision. They directly and potentially affect the life-blood of the people. It was for this reason that I welcomed the idea of subjecting those principles to a thorough examination by a strong committee. If the principles are once clearly formulated experts will easily adjust settlement rules to them. There will always, of course, be anomalies and special cases but these should not obscure broad issues nor impede the fixing of clear cut principles for regulating the assessment of land. Nonetheless do I urge on the committee to see a settlement in working. If they will visit only a couple of villages and examine *in situ* map and assessment statement, they will learn more about the processes of settlement than by months of reading or recording evidence. Indeed, without this practical examination they will find it difficult to grasp and realize the effect of essential principles.

PLEA FOR MODERATE ASSESSMENTS.

In 1830 Sir Charles Metcalfe observed, 'I believe that the happiness of the bulk of inhabitants of the western provinces depends more on revenue settlements than on any other thing whatever.' Mr. James Thomson used to say in the event of violent outbreaks

of crime, 'Look to your revenue assessments'. Sir Alfred Lyall once observed that few human beings could cause so much misery to so many people as a settlement officer who over-assesses a district. The late Lord Cromer was never tired of quoting the learned historian Dr. Hodgkin to the effect that excessive taxation of land was one of the main causes of the decline of the Roman Empire. Mr. Finlay, a profound economist and historian of the Byzantine Empire, also attributed the fall of the Eastern Empire largely to the same cause. Recent agrarian trouble in Oudh commenced in Patti tahsil of the Partabgarh district, which received a notoriously high assessment at the last settlement. Whether this be the consequence or merely the sequence, I believe that there is no more urgent problem in the United Provinces to-day than a revision of our rules in regard to the settlement of land revenue. Land revenue settlements rest ultimately upon the principle accepted from time immemorial and embodied in the following terms by regulation 31 of 1803:—'By the ancient law of the country the ruling power is entitled to a certain proportion of the actual produce of every *bigha* of land, excepting in cases in which that power shall have made a temporary or permanent alienation of its right to such proportion of the produce or shall have agreed to receive instead of that proportion a specific sum annually or for a term of years or in perpetuity.' In primitive times the share of the state was divided off from the grain heap on the threshing floor and varied with the crop. Eventually it was converted into a fixed cash payment, representing a certain percentage of the assets or the rental value of the land, *i.e.*, actual cash rents, where existing, plus a valuation of area not cash-rented.

STEADY REDUCTION IN STATE DEMAND.

The share of the state has been steadily reduced. In 1812 it was 90 per cent. In 1822 it was 80 per cent. In 1832 it was 72½ per cent. In 1840 it was 66 per cent, and in 1855, 50 per cent. The half assets standard of 1855 was introduced by the Saharanpur rules which contained the following passage:—'The assets of an estate can seldom be minutely ascertained but more certain information as to the average net asset can be obtained now than was formerly the case. This may

*Memorandum specially supplied to the U. P. Settlement Committee.

lead to over assessment for there is little doubt that two-thirds or 66 per cent is a larger proportion of the real average assets than can ordinarily be paid by the proprietors or communities in a long course of years. For this reason the Government have determined so far to modify the rule laid down in paragraph 52 of the directions to settlement officers as to limit the demand of the state to 50 per cent, or one half of the average net assets. By this it is not meant that the *jama* of each estate is to be fixed at one-half of the net average assets, but that in taking these assets with other data into consideration, the collector will bear in mind that about one-half and not two-thirds, as heretofore, of the well-ascertained net assets should be the Government demand. The Collector should observe the cautions given in paragraphs 47 to 51 of the treatise quoted and not waste time in minute and probably fruitless attempts to ascertain exactly the average net assets of the estates under settlement.

Mr. Hooper in his very able settlement report of the Basti district comments on the reason for reduction to 50 per cent, remarking that though at first sight it was a curious one it was essentially sound and he believed that the assessment which he had made, because it was made strictly on rentals, really did take a larger proportion of the real assets than any of the preceding settlements did. This opinion is all the more striking because in previous settlements account had been taken of prospective increases in value and no allowances had been made for improvements by landowners. Concessions on these points were made in the eighties. There has thus been progressive moderation in the standards in recent settlements. Even after a lenient valuation of the assets a share of less than half the assets has been accepted by the Government.

LARGE ENHANCEMENTS.

Yet enhancement has in many cases been large. I give figures for the last six districts that have come under the revision of settlement :—

	Old Revenue	New Revenue	Percentage of enhancement	Percentage of Assessments
Saharanpur ...	15,15,301	21,09,918	39·2	45
Muzaffarnagar.	16,58,000	21,61,000	39·2	44·86
Bulandshahar.	20,36,19	27,52,972	35·20	45
Basti ...	20,52,979	27,97,902	35	44·5
Gorakhpur ...	25,92,000	36,73,000	41·7	43·4
Allahabad ...	17,12,000	18,99,000	10·9	48·4

A FURTHER REDUCTION URGED.

Surely time has come to recognize the inevitable tendency of things and to carry forward the progressive moderation shown by the Government by fixing the standard of assessment at 40 per cent of assets. (The cesses that are imposed for local objects in addition to the revenue are on a separate basis. Without going into this question it may be noted that there is no limit to the power of the Legislative Council to impose such cesses.) The settlement officer at present can take as little as 45 and as much as 55 per cent of the assets and I would propose that in future the limits of his discretion be fixed at 35 and 45 per cent. I would even let the settlement officer go down to 30 per cent in cases requiring special eniency or up to 50 per cent in order to avoid a reduction of revenue where reduction is not required.

It may be urged as an objection that this lowering of the standard may lighten the assessment of proprietary bodies who cultivate their own holdings, but this class is specially entitled to consideration and a lenient valuation of their proprietary holdings is strictly in accordance with the custom of the country. Another objection is that the lowering of the standard of the assessment will fall unevenly on areas in which there is a respectively large or small proportion of land held by occupancy tenants. But this unevenness exists at present and would exist under any standard whether 50 or 40 or even 30 per cent. We have got on well enough with one standard so far. As a matter of fact, the Government does at present, and must often, take much below 50 per cent of the assets and it seems clear that it should get the credit of its moderation by facing and declaring its policy. The moral and political effect of this concession will be considerable.

CALCULATION OF ASSETS.

Not less important in certain cases than the standard of assessment is the calculation of the assets. In some districts, particularly in the west, occupancy tenants by prescription pay rentals much lower than non-occupancy tenants. In such districts the circle rates should, I suggest, be based not on the rents of non-occupancy tenants nor on the rents of tenants who have recently acquired occupancy rights but on the rents paid by occupancy tenants of 12 or 20 years' standing. This is an important matter of principle which should be settled authoritatively. I understand that the committee have already considered

it. Our earlier settlements paid little heed to flesh and blood considerations. The old doctrine 'assess the land not the turban' was worn bare. From the flesh and blood point of view the crux is the enhancement taken from the revenue-payer. He has been living up to his income. There are more people to support from the land. The costs of living have increased enormously with the rises in prices and wages, the expense of educating his children and the new expenses incidental to improved surroundings and the risen standards of life. How can he meet a sudden increase in the Government demand? He will pass it on to his tenants if he can, he will increase the area under cultivation if he can. But more and more rents are being fixed by the courts and less and less really culturable area remains to be brought under the plough. It has been increasingly forced on settlement authorities that enhancements must be limited. Already large enhancements have been spread over three instalments of five years each, but even so they have been very high. Revenue-payers cannot understand our elaborate methods of assessment. They understand and feel in their pockets one thing and one only: the enhancement. Their interest is not what Government leaves them but what it takes away. The Government of India require their sanction to any enhancement over a whole district exceeding 33 per cent. When the enhancement on a district as a whole is 33 per cent, the enhancement on individual revenue-payers is always considerably more, because in many villages there is no enhancement and in some there is a reduction of revenue. I would suggest a limit of enhancement at 33 or even 30 per cent for the individual revenue-payer for his whole estate or that portion of it situated in a certain area which is separately assessed (such as a pargana or a tahsil). I would, however, exclude those villages in which since the last settlement there has been an increase in cultivated area (not previously valued) of more than 10 per cent, or in which the value of the land has been greatly increased by works of direct agricultural improvement constructed by the state *e.g.*, canals and embankments. I think that these figures will work out fairly well in most cases, even where the rental of occupancy tenants has been raised.

In protecting the landlord, I would also protect the tenant and limit an increase of rental at any one time to 33 or 30 per cent according to the limit fixed for the landlord

except in the case of those tenants who pay nominal or specially privileged or unusually low rents. This will secure all reasonable privileges to occupancy tenants of long standing.

PERMANENT SETTLEMENT.

There remains the term of settlement. I am opposed to the grant of a permanent settlement on three principal grounds:— (1) It fixes the revenue from the land, while the expenses of Government grow faster than the sources of taxation. (2) It leads to great sub-infeudation of rights in the soil and with it too much sub-letting all down the line which involves the worst forms of rack renting. 'A poor man that oppreseth the poor is like a sweeping rain which leaveth no food.' (Proverbs Chapter 28 V, 3). (3) It fails to provide for real economic changes for better or worse such as great changes in prices or general agricultural improvement or deterioration. (Too much must not be made of the rise in prices. The rents of landlords are not easily varied and the holdings of the tenants are so small. The average for the province is probably under 5 acres and for the eastern districts probably under 3 acres. And they so often sell their crops in advance that the rise in prices is dispersed and must be largely discounted.) But where the pressure of the population on the land is great and where the culturable area is fully cultivated and full rentals have been reached, I would suggest a period of settlement of 35 or 40 years. I have particularly in view districts like Allahabad, Fatehpur, Muttra or again the densely populated plains of southern Oudh where these three conditions are fulfilled and in addition the New Rent Act will prevent landlords from raising rents as hitherto. It is difficult to ascertain the margin of cultivation or the really culturable area that is uncultivated. Wide *usar* plains which are not culturable without large outlay, if at all, are shown as culturable in our present returns. Indeed, I can suggest no clear criterion for increasing the period of settlement which could be embodied in rules, but the Government aided by discussion would have no difficulty in deciding cases of individual districts on their merits. The principle has already been admitted by extending the period of settlement for as long as ten years. When no real enhancement has been expected I would grant very liberal allowances for improvements made by the people. An allowance representing a mere

return on capital expended is often not sufficient. Take, for instance, the settling of a new hamlet. The actual outlay on paper may be small, but the labour involved, the inducements offered, the effect on the stability of the village, may be very great. As regards improvements from public funds, such as the Sarda Canal, the Government will get its return from these, as it has done hitherto, in water rates and at subsequent settlements no change of policy is required on their account. Other public improvements such as improved communications act only slowly and indirectly on rental values and

cannot be quantified. A simplification of settlement proceedings is desirable. The attestation work at present carried out is, in my opinion, unnecessary. I appointed three deputy collectors to be specially in charge of land records. The number should, I suggest, be largely increased as funds become available. In the long run this will be economical by saving heavy outlay at the periodical revisions of settlements. Events are forcing a fixation of rents by the courts. The importance of accurate records is from every point of view becoming yearly of greater consequence to the people.

Need for an All-India Gauge Policy.

Mr. F. G. Royal-Dawson, M.Inst., C.E., in the course of a paper before the Indian Section of the Royal Society of Arts on April 28 on "The need for an All-India Gauge Policy," said when the traffic began to exceed the capacity of a single line, the railway was faced with the alternative of doubling or conversion to a wider gauge. In the case of the metre gauge the cost of conversion to broad gauge was, generally speaking, rather less than that of doubling, while the immediate effect of conversion was to double the capacity of the track. The point to note was that all railways must incur additional capital expenditure from time to time to meet the natural growth of traffic, so that if it became recognized rule that the metre gauge railways, which, as already noted, were still practically all single track, should be converted to broad gauge in preference to doubling as soon as their traffic exceeded the capacity of a single track, the meter gauge would be automatically eliminated in course of time, practically without incurring any expenditure beyond that which would have to be incurred in any case to meet the growth of traffic. So much for existing metre gauge lines. An exception might be made in the case of Burma and the Assam-Bengal railway, which being more or less isolated from the general railway system of India, could be left out of the conversion scheme for an indefinite period without detriment to public interests. Other metre gauge areas would also be left undisturbed so long as the traffic was insufficient to justify conversion.

The construction of new lines on the metre gauge would have to be restricted by legis-

lation in such a way as not further to prejudice the position. To meet the objections of those who argued that the poorer and undeveloped districts of India would not yield sufficient traffic to make a new broad gauge line pay its way, he proposed that 2 ft. 6 ins. and 2 ft. feeder lines be permitted as at present, on the understanding that such lines be converted to broad gauge as soon as the growth of traffic was sufficient to justify the cost of conversion.

The above were the three salient features of a policy which, if carried out intelligently and consistently, would rid India, in course of time, of the curse of the dual gauge without involving more expenditure, practically, than that required to meet the natural growth of traffic. In considering the practicability of carrying out such a policy, it should be noted that the principal railways of India were state-owned, of which three were also state-managed, the remainder being company worked on such terms that Government got by far the greater share of the profits as the predominant partner. Moreover, the present time was specially favourable for considering the question, for the recent five years' programme, drawn up by the Railway Board, showed that all available money for the next five years would be required for the rehabilitation of existing lines, so that the construction of new lines would be practically suspended during that period.

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The Madras State Aid to Industries Bill.

The following is the statement of objects and reasons of the above Bill introduced by the Hon. Mr. K. V. Reddi :—The objects of this Bill are to afford, subject to suitable limitations and safeguards, State assistance to industrial enterprise in this Presidency, partly by financial methods and partly by providing on favourable terms raw materials, firewood or water, being the property of Government. The special circumstances which, at the present stage of India's economic growth, tend to retard the development of industries and of industrial finance have been fully analysed in the report of the Industrial Commission and need not be recapitulated. It is sufficient to observe that, while deficiency in business experience and practical knowledge of the technical details of an industry have contributed to delay progress, the general ignorance of industries and of banking on the part of the major portion of the population and the timidity and conservatism of the investing public have been no less potent causes operating in the same direction.

2. The following are the main features of the measure now proposed :—

The scope of the Bill extends to industries which are of economic importance, and are either new, or nascent ; or are sought to be introduced in areas in which they are still undeveloped ; and, lastly, to cottage industries. The opportunity has been taken to place upon a statutory footing the Board of Industries now existing by executive order, but with an enlarged and partly elective constitution. Its functions as hitherto will be advisory.

The forms of financial aid contemplated by the Bill are loans ; subsidies (not exceeding 40 per cent of the cost) for the purchase of machinery and for the conduct of research ; State guarantees either of a minimum return on the paid-up capital of an enterprise or of the due discharge of cash credits, overdrafts or advances allowed by a bank to the management of an approved industrial concern ; and, lastly, the taking up by the State of shares and debentures in industrial enterprises. All loans or advances are to be secured as a charge upon the whole assets of the enterprise subject to prior encumbrances and by collateral security if required.

Provision is made to enable Government to require the recipient of State aid to submit

to inspection both the premises, plant and stock and the accounts of the concern, and to furnish, if required, returns of its production and any other special accounts or statements ; in the case of the larger concerns the Bill provides for the exercise of control by the appointment of Government Directors or otherwise.

The Bill further provides that until the conditions on which assistance is granted have been fulfilled Government may limit the profits or dividends to be paid. Further, all moneys payable under the provisions of the Bill are to be recoverable by the revenue authorities as arrears of Land Revenue.

Lastly, it is provided that when an industrial enterprise has received assistance in the form of a subsidy or a grant of raw material, firewood etc., it shall be bound to repay the value of the assistance at the close of a fixed term of years, if in the interval it is shown to be sufficiently prosperous.

3. In view of the peculiar character of the present measure and in order to render the working of the Act as flexible as possible, it has been deemed desirable to confer upon the Government extensive powers to regulate various matters by means of statutory rules to be made under it.

Preparations are being made for the construction of hydro-electric works in connexion with the Lower Bann River, a few miles above Coleraine and about a dozen miles from the mouth of the stream. It is calculated that an annual output of 35 million units is possible, and it is hoped not only that the adjacent towns of Coleraine, Ballymoney, Antrim, and Ballymena will be supplied with energy, but also that there will be a surplus for transmission to Belfast, about 30 miles away. According to Mr. J. C. White an ex-Lord Mayor of Belfast, who is at the head of the project a syndicate is to be formed immediately in London for the purpose of promoting a Bill in the Northern Ireland Parliament during the forthcoming session. The necessary capital, he states, has been obtained. It is possible that some opposition may be offered by navigation and fishing interests on the Bann, as well as on account of possible flooding from the waters of Lough Neagh, out of which the river flows.

Indian Central and Provincial Finance.*

By Sir Montague Webb.

The Montagu-Chelmsford Report, it will be remembered, looked forward to the time when India would consist of a group of self-governing provinces associated for certain purposes under a responsible Government of India. To attain this end it would be necessary to give to the Provinces the largest possible measure of financial independence. And so the Montagu-Chelmsford Report aimed at "entirely separating the resources of the Central and Provincial Governments." I ask the House to carefully note this—the entire separation of Provincial from Central finances.

Now, how did the Montagu-Chelmsford propose to achieve this? The revenues from Customs, Salt and Opium then went to the Imperial Government, plus any surpluses that might arise from Railways, Posts and Telegraphs. So these sources of revenue were all left with the Central Government. Land Revenue, Income Tax, Stamps, Excise and Irrigation receipts were at that time generally divided equally between the Provinces and the Imperial Government. The Montagu-Chelmsford Report proposed to give the whole of the Land Revenue, Judicial Stamps, Excise, and Irrigation receipts to the Provinces, and the whole of the Income Tax and General Stamps receipts to the Central Government. As this division would leave the Central Government with a deficit, the Montagu-Chelmsford Report suggested that the deficiency should be made good by contributions from Provincial Governments. Exactly on what principles these contributions should be determined, the Montagu-Chelmsford Report did not decide, but a temporary arrangement was suggested by which each Province should contribute most of the additional revenue that it would receive under the proposed new system of devolutionised finance. This rough and ready arrangement was frankly recognised to be merely based on expediency, and certainly to need revision perhaps after a period of six years.

LORD MESTON'S COMMITTEE APPROVE.

These ideas were subjected to a somewhat

more detailed consideration by a Committee over which Lord Meston presided. This Committee hastened round India and in a little over a month, produced a Report dated 31st March 1920, approving generally of the scheme of financial devolution proposed in the Montagu-Chelmsford Report, but giving General Stamps as well as Judicial Stamps to the Provinces, —merely a minor change. But the Meston Committee went further. Greatly daring, this Committee put forward certain estimate of the Central Government's probable deficit, and the Provincial Governments' probable surpluses; and, from these figures the Committee deduced the amount of each Provincial Government's contribution to the Central Government, varying from fifteen lakhs in the case of Assam to three and a half crores (348 lakhs, to be exact) in the case of Madras. And, to complete their work,—it only took about six or seven weeks, remember,—whilst recognising the very great difficulty of arriving at a reliable basis for calculation, they nevertheless drew up, without any explanation of how it had been done, a table of "Standard Contributions" which they considered each Province should work up to in seven years. These contributions varied from 2½ per cent of the Central Government's deficit in the case of Assam, to nineteen per cent of the deficit in the case of Bengal. Bombay, Madras and the United Provinces ought, in the Meston Committee's opinion, to contribute, 13, 17 and 18 per cent respectively of the Central Government's deficit.

THE PRESIDENCIES' PROTEST.

This Report was submitted to local Governments all of whom, I believe, the three Presidencies, in particular, protested more or less strongly against the division of revenues that had been proposed. However, the Report together with local Governments' protests, and a draft of the Devolution Rules based on the Report, were all submitted to a Joint Select Committee of Lords and Commons who, whilst making important recommendation regarding the allocation of Income Tax Revenue, saw no reason to differ from the fundamental features of the financial proposals made by Lord Meston's Committee. So in the end, the Devolution Rules reproducing the Meston Committee's recommendations (except that the "Standard Contributions" were increased by about ten

* Speech delivered on September 14 in the Indian Legislative Assembly on the occasion of the Financial Relations Debates in supporting the Bombay Amendment that a Royal Commission should examine the financial relations between the Central and Provincial Governments.

per cent by relieving Bihar and Orissa from the liability to contribute anything to Headquarters, the other Provinces having to make up the difference), were approved and issued. And these Devolution Rules form part of the law of the land to-day.

REPORT "RADICALLY WRONG"

Now, Sir, I venture to submit with all respect, that the distinguished authors of the Montagu-Chelmsford Report went radically wrong when they aimed at entirely separating the financial resources of the Central Government from those of the Provincial Governments. I submit that the Meston Committee, in following this wrong lead, went further astray. Confusion became worse confounded when the Joint Select Committee expressed their approval of the Meston Committee's Report, and emphasised a hope that the Government of India would "make it their constant endeavour to render the Central Government independent of Provincial assistance at the earliest possible date." Whilst the Devolution Rules wherein an attempt is made to crystalize this misdirection, mark the climax of a procedure which, wrong from the first, can only result in a perpetuation of error, of injustice, of financial chaos, and ultimately, if persisted in, of the revolt of the Provinces against the Central Government.

THE REAL SITUATION.

For what is the real situation? Let us turn to fundamental principles. The organization at which we are aiming, is a group of self-governing Provinces linked to one responsible Central Government. What are the chief functions of this Central Government? The general supervision, direction, and control of India's interests as a whole: the protection and defence of India: the conduct of India's finances—foreign exchanges, service of debt, Home Charges, etc.: political relations: frontier administration: and so on, there are forty-seven heads of services in the Devolution Rules. These functions are all being carried on for the benefit of the Provinces, and for the benefit of nobody but the Provinces. Why then should we aim at relieving the Provinces of their just liability to contribute towards the cost of these vitally important services? Why endeavour to give Provincial Governments the impression that the maintenance of a good, sound, powerful Central Government is no concern of theirs? Just look at the painful results which have followed. We have heard pitiful stories this morning from

Madras of "yellow" milch cows of "toads beneath the harrow," etc. One would never dream when listening to these tales of woe that Madras was given over five crores of *extra* revenue and only asked to return *three*! Who would suspect when listening to the Hon'ble representative of the United Provinces that those provinces were given nearly four crores of *additional* revenues and only asked to return two! What, I ask, is there to complain about in a settlement of this character? No Sir. This policy, I submit, is wholly unsound. So far from encouraging the Provinces to forget their obligations to Headquarters, I submit that we should place in the hands of Provincial Governments the whole of their local resources, and then say to those Governments—please take careful note. Your first and foremost thought must be to provide for the maintenance of your Central Government upon which you daily depend for services of vital importance to you. The Central Government require so much—whatever the figure may be—to balance their Budget. Your share of that balance—your contribution will be 5 or 10 or 15 (or whatever it may be) per cent. This contribution towards the upkeep of the Central Government will always be the first item on the expenditure side of your Provincial Budget, and must be remitted to Headquarters without fail, no matter what other item of Provincial expenditure may have to go short.

THE ONLY WAY.

This, I submit, is the only sound, business-like method of financing the ultimate needs of the Central Government. Remember, all the Provinces are properly represented on this Assembly which controls both the Income and the Expenditure of the Central Government; so that if the Provinces hold the view that the cost of their Central organization is unduly heavy (thus throwing an excessive burden on the Provinces), then their remedy can, and should, be taken by way of this Assembly, but not as has been done to-day, by simply making demands that they should be let off some of their just and fair contribution (thus leaving the Central Government to get out of its difficulties as best it can), but by a concerted, reasoned endeavour to cut down the cost of the Central Organization.

No doubt there may be some difficulty in determining exactly what percentage of Headquarters' needs each of the nine Provincial Governments ought to contribute. The Meston Committee quite recognised this. They

even went to the extent of analysing the difficulties, and explaining the whys and wherefores of each. Yet these difficulties did not prevent the Meston Committee after a brief seven weeks' study of the situation, from putting forward a definite table of "Standard Contributions" which the Provinces were to attain after seven comfortable years of annual adjustments. And what the Meston Committee did hurriedly, and we can now see, badly, a Royal Commission, or some such impartial and authoritative body, with plenty of time at its disposal could unquestionably do properly and satisfactorily.

RESULTS OF AN UNSOUND SYSTEM.

Just look at the results of the present unsound system. Whilst the Central Government is quite unable to make both ends meet, and is struggling desperately for the fifth year in succession to arrest a dangerously expanding deficit, Provincial Governments, encouraged by the belief that their contributions to Headquarters are to disappear altogether "at the earliest possible moment" (I am quoting the Joint Select Committee's words), are quietly shutting their eyes to Headquarters' difficulties, and blindly asking that they may be let off two crores of their contributions. Could anything be more absurd? Like some of our more optimistic politicians who desire to accomplish in ten months what the Montagu-Chelmsford Reform Scheme contemplated would require ten years. Provincial Governments are now in effect asking that the period of transition in their Provincial contributions to be shortened in the hope that the complete separation of the finances of the Provinces from those of the Central Government, and the termination of their liability to contribute to the cost of their own vitally important Headquarters may be accomplished as soon as possible. All wrong, I submit, Sir; all wrong.

EARLY REVISION IMPERATIVE.

The financial impasse which now confronts us, cannot possibly be permanently overcome by such shifting expedients as annual doles,—by letting off Bihar and Orissa from any contribution towards the upkeep of Headquarters for ever (as the Devolution Rules appear to contemplate), by letting off Bengal for three years (as the Government of India in a weak moment have agreed), or by letting off for this one year Madras, the United Provinces, and the Punjab to the extent of two crores (as the Mover of to-day's Resolution suggests). No, Sir. These efforts to

patch up an impossible situation must fail. In the first place, the Central Government whose financial difficulties ought to be our chief concern to-day, are faced by a very serious deficit, and have therefore nothing to give away. Read the Devolution Rules as you like, you cannot draw blood from a stone. In the second place, if the Government of India were in enjoyment of a handsome surplus, and we felt that the concession made last year to Bengal ought, under Rule 18, to find its reflection in concessions to other Provinces,—as I notice my friend Mr. Samarth has contemplated,—then I for one could not agree—as Mr. Samarth has done—to confine my expressions of equity to Madras, the United Provinces, and the Punjab, and overlook the needs of the other six provinces. We *must* recognise, I submit, that the Meston Committee forecasts have been wholly falsified, partly, no doubt, in consequence of developments which possibly no Committee could have foreseen, and partly because they were built on foundations that were utterly unsound. The halving of Land Revenue and Income Tax between the Provinces and the Government of India which produced once satisfactory results, has now been replaced by an unfair arrangement whereby the Government of India take over *the whole* of the largely *expanding* item of revenue—Income Tax, and hand over to the Provinces the whole of the largely *stationary* item of income—namely Land Revenue. And we can but see that no number of annual concessions now to this Province, now to that, can possibly put matters right, this year, next year, or ever. The position at present is simply chaotic. Everybody is dissatisfied. The Presidencies are up in arms and the other local Governments all have grievances of greater or lesser magnitude. There is only one course. Let us admit frankly that things have not worked out as the Meston Committee and the Government of India anticipated. Let us admit quite openly that the Meston Committee's calculations and the Devolution Rules based thereon, will have to be revised, and that the sooner the work is undertaken the better.

AN APPEAL TO THE HOUSE.

I appeal to this House not to add to the financial confusion and discontent by asking the Central Government to make concessions that can, at the best, only keep the discontented ones quiet for a few months, till next year's budgets come to be prepared. I appeal to the Hon. the Financial Member not to dole

out any quack remedy, but to take his courage in both hands and call in at once the best doctors available to examine and study the whole situation. I appeal to the Government of India to accept the amendment of my friend Mr. Jamnadas Dwarkadas, and to arrange for the appointment of a Royal Commission or other authoritative and impartial body to lay down a new system of financial relations between Provincial Governments and the Government of India, based, as our Madras friends would put it, *not* on "mere expediency resting on arrangements admittedly inequitable," but on foundations of which reason justice and equity formed the sole ingredients (Loud applause).

The Hon. Finance Member declined to accept the Amendment on the ground that the appointment of any commission of enquiry would be premature in the present very unsettled and uncertain conditions of trade, finance and exchange.

Ultimately, as already reported, both Amendment and original Resolution were rejected,—those who required the "dole" of two crores voting against the proposal to appoint a commission of enquiry; and those who wanted a Royal Commission voting against the proposed concession of two crores. Government Members voted against both the Resolution and the Amendment.

Novel Form of Concrete Road.

The following is reproduced from the *Times Trade Supplement* :—

An interesting piece of concrete road has been laid in the goods yard of the Great Western Railway at Southall Station, and has been in use since the beginning of this year carrying a heavy traffic of coal carts to and from the coal depot.

Three units only are used in the construction, which is in accordance with the patent of Messrs. J. E. Spagnooletti and Alfred S. Grundspan. The major part of the road is made up of concrete discs, 2 ft. in diameter and 6 in. thick. These are laid touching each other on the prepared under-bed, and in the space formed by each four of them placed in juxtaposition is inserted a filler block, also of concrete, the faces of which are curved to fit those of the main blocks. Finally, the whole is keyed together by dowel pins, which are passed from the surface diagonally through the main and filler blocks in holes left for the purpose, and the interstices between the blocks are grouted. Scribe marks indicate the position of the holes, and the laying of the blocks and the insertion of the pins can be carried out by unskilled labour. A hole, 1 in. in diameter, is formed in the centre of each of the main blocks, which are reinforced top and bottom, and weigh about 2 cwt. each, and by placing a rod through this, they can be readily rolled into position.

When the concrete is laid *in situ* a road should remain closed to traffic for at least six weeks to give the concrete a chance to mature. Even at the end of such a period, it is doubtful whether a concrete to the

underside of which the air has no access and which is subject to the vibration of the surrounding traffic is well matured, and if it is not it is apt to fail by subsidence, giving rise to depressions and pot holes. With the construction used at Southall, both the main and the filler blocks are pre-cast; thus they can be manufactured in advance at any convenient point, and stored for four or six months until they are thoroughly seasoned, while traffic can be admitted on the road immediately after they have been laid, if, as at Southall, it is to run on the bare concrete. Of course wood pavement or other covering can be laid if desired, but the concrete provides an even surface, which gives a good foothold for horses.

Among other advantages claimed for the system are that while the road is continuous it is yet resilient, by virtue of the large number of discs keyed together, that it has no tendency to crack and is not affected by expansion and that there is no direct line of joint. If alterations are required to the gas, water, or electric mains, the blocks can be readily taken up, after the dowel pins have been driven right through into the ground underneath, and can be as readily replaced.

The road at Southall has been in use for about four months. Half it is usually occupied by standing coal carts, so that the bulk of the traffic passes on the other half, but there is little difference to be seen in the condition of the two halves. Sections of road on the same principle are to be laid at various other places, including Chelsea, Leeds and Nottingham.

The Standard of Living in India.

By Mr. Madan Mohan Varma, M.A.

"The standard of living of a class or community is 'the product of the ideals and resources of its members, and, in turn, modifies their criteria.'" "A healthy standard of living is one which conduces to healthy symmetrical development, physical, mental and moral".*

If the standard of living of a community is "the product of the ideals and resources of its members, and, in turn modifies their criteria", and if a healthy standard of living is one which "conduces to healthy symmetrical development, physical, mental and moral," it is very important for the Indian economist to apply the theories that he has studied to his own country, whose ideals have never been known to be anything but the highest and whose resources are the most plentiful as compared to those of any other country in the world, and, yet, whose standard of living has not conduced to "healthy symmetrical development." That such a study is urgently needed in the best interests of India need not be proved. It is important both from the economic and the moral points of view. Says Marshall: "A rise in the standard living implies an increase of intelligence and energy and self-respect; leading to more care and judgment in expenditure, and to an avoidance of food and drink that gratify the appetite but afford no strength, and of ways of living that are unwholesome physically and morally. A rise in the standard of living for the whole population will much increase the national dividend, and the share of it which accrues to each grade and each trade. A rise in the standard of living for any one grade or trade will raise their efficiency and therefore their own real wages: it will increase the national dividend a little; and it will enable others to obtain their assistance at a cost somewhat less in proportion to their efficiency"† It is important from the moral and spiritual points of view too, not only because the pursuit of a higher standard of living is "the inspiration of intellectual advance" but also because it conduces to growth of activity, and activity, when in harmony with the higher nature in man, means the fulfilment of the obligation for which man takes birth,

it means the accumulation of *experience*, on which depends the evolution of human soul. Activity is a very aspect of God, and perhaps *the* aspect of the God unfolding in man.

Thus we see that a higher standard of living means greater comfort, which implies favourable environment, freedom from anxiety which means more time and opportunity for higher pursuits; greater activity—new wants developing new activities, these activities giving rise to new wants and these wants again giving rise to new activities—which, if in the proper direction, means a fuller life. Indeed the term "standard of life" means as Marshall puts it, "the standard of *activities* adjusted to wants."

To understand the causes of the great difference between the high standard of living in the civilized countries of the West and the low standard of living in India we have to go deeper than the surface of "economic condition". We have to study the very "ideals" and not merely the "resources" of each. For who can question the concentration of varied and plentiful material resources in the great land of India or the intelligence and capacity of its people. But the ideals that most of the best brains of the East have pursued are different from those that most the best brains of the West have. The former have mostly cherished the wealth of the 'other world' in preference to the wealth of this world; they have had the renunciation of wants as their ideal while the latter have generally glorified in the multiplication of wants. And we find the effects of this difference of outlook in their different conditions of material development and in their different standards of living.

But why are we unhappy now? Obviously we have drifted with our own ideals, and why are thirty millions of us distressed at our "worldly" poverty? There must be some black smudge somewhere. And further more, what of the "untold wealth of India" in days when India was at the height of her spiritual civilization? How to explain the combination of spiritual and material development of the 'golden age' of India—proved by study and modern enquiries beyond a shadow of doubt—and the combination of spiritual and material poverty of the India of the present day? Let us try to answer these questions,

* *The Standard of Living* (Streightoff)

† *Principles of Economics*,

The existing notions about the 'ascetic' idealism of the ancient Indians, though excusable, based as they are on superficial, thought rather than on deliberate misinterpretation, are grossly exaggerated. Says Aurobindo Ghosh: "*There was never a national ideal of poverty in India, as some would have us believe, nor was bareness or squalor the setting of her spirituality*" * Let us reproduce in English a few passages from the ancient texts in the importance of wealth; "Man accumulates wealth because it is at the root of the world. I see no difference between the dead and the poor". "Do remember, O King that men are not slaves of men but of wealth. It is by reason of riches and poverty that men are high and low, hence you should leave no stone unturned in producing wealth." "Poverty, beggary and slavery are fruits of sins, they should be shunned by everybody. The poor are disregarded by all—even by their wives and children, and relatives. The fruits of all actions of the poor dry up like rivers in the summer season. On account of this wretched poverty, some take refuge in forests and lonely mountains, some fall into the clutches of their enemies, some sell themselves into slavery, some lose their senses, while others commit suicide. The poor are called miserable and sinful, while the wealthy are addressed by all as happy and righteous souls. High birth, good character, learning purity, contentment, intelligence, fluency of tongue, and even a thousand other qualities do not shine in the absence of riches. Wealth alone is the foundation of all qualifications. Think of a man, of high intelligence but without wealth, how his wealth wears out by constant anxiety to procure the various articles of his food. Verily a poor man is like a bird without wings, a tank without water, a serpent without fangs and like a tree that is dried up". "Poverty is the cause of shame, shame hurls down a man from his lawful position. Then he is dishonoured by all, this gives rise to anguish and mortification and consequently to the obscuring of his intelligence, this in turn leads him to ruin. Thus bellish poverty is the root of all misery, In short, the very existence of a man is precarious without wealth, which is the true source of pleasure and heavenly bliss. It is the fountain of religion and support of the universe. None can attain the heavenly bliss without wealth. The rich

alone are living in this world, the poor are very dead; nay, poverty is even worse than death!!* Again the system of low wages has been forcibly deprecated (even for the Sudras) so that they might live at a decent standard of living. Sukra lays down that "wages are to be so fixed that a worker may maintain all his special dependents."† The complete list of such dependents "who are to be religiously maintained to the best of one's ability even under adverse circumstances" includes some twenty persons. This shows that the rate of wages must have been sufficiently high to supply the labourer with a comfortable living both for himself and his family.

So we see that *not all* our ancients were careless with regard to wealth. *Not all*, and this is an important point. Asceticism might have been—in fact was—the creed of a section of the people, but it was never the creed of the whole of India. It is true that many good men used to subordinate their earthly wants to higher pursuits, but these higher pursuits consisted not merely of retired contemplation but often of ceaseless activity in the cause of the poor and the ignorant. Renunciation of "wants" may have been their ideal but renunciation of 'activity' was never the aim of most of them. Therefore was India wealthy and prosperous.‡

It was when the ancient doctrines were misunderstood and mis-applied that our prosperity declined. On the one hand many of our people forgot their Dharma, and identified spirituality with abstention from action, for getting the warning of Sri Krishna: "Man winneth not freedom from action by abstaining from activity, nor by mere renunciation doth he rise to perfection". * On the other hand, what was the duty of a few—renunciation—made the false appearance of an ideal for the general people, who obtained it in the form of inertia, for they were incapable of higher spiritual understanding. That is why Sri Krishna warns: "Let no wise man unsettle the mind of ignorant people attached to action; but acting in harmony with me let him render all action attractive."§

However, Indian mind has always looked upon the satisfaction of material wants as a

* Quoted by Professor Bal Krishna in the *Indian Journal of Economics*, Vol. II, part 4, p. 637.

† Quoted in the same article, p. 648.

‡ Bhagavad Gita, III, (4).

§ *Ibid*, III (26).

* The Renaissance in India, p. 73.

means to an end. The end, the vision, has always been spiritual. Hence there never has been a mania for an indefinite multiplication of "satisfactions" as there has been in the West. Even comfort, by itself, has no satisfaction for the Indian mind save as a means to efficiency, a means to the efficient performance of *Dharma*. The case is different with the west, where the civilization is more materialistic than spiritual and where to live is the problem which exercises too many of the most powerful minds of the race, rather than to be. That is why, in spite of material prosperity, there is no "happiness" in the West as yet. Men are passing on from desire to desire, from one satisfaction to another satisfaction, and yet are not satisfied. Why, because there is no Reality behind the whole of their artificial paraphernalia, and *desire* for its own sake, as Sri Krishna says, is "insatiable as a flame."

There is truth in both the Eastern and the Western thoughts. To go on multiplying wants and activities, and consequently fresh wants, is an endless process leading to the will-of-the-wisp. The ever-changing tastes and fashions, and the methods of production in the West, are sickening. The simple life of the East, in which contemplation plays a large part, free from hurry and rush, is a source of peace. But the danger consists in a wrong understanding of a truly spiritual attitude of mind by the average man. When the pendulum goes on the opposite side of activity, too often inertia is the result. And inertia is as good as death to a people. On the other hand, there is much to admire in the scientific mind of the West, even busy in opening some sealed document of nature, and continually trying to bring nature under man's subjection, to make life easier and smoother for him, through the invention and application of a large number of economies of time, energy and money. But here also there should be a limit to human endeavour. For production and consumption are no *ends* by themselves. Above all, activity is necessary both for the spiritual and the material emancipation of man. The motive for action ought to be as high as possible, but inaction can achieve nothing. *The Bhagwad Gita* sounds an universally true note: As the ignorant act from attachment to action, O Bharata, so should the wise act without attachment, *desiring the welfare of the world*.*

'The welfare of the world', note. The welfare of the world is the keynote of man's *Dharma*. Therefore our standard of living must be conducive to *welfare*. It is not necessary for our welfare that we may have food to furnish heat to run our bodily machine and to supply matter with which worn out tissue is replaced, clothing to protect against inclement weather, conserve vital energy and make us as beautiful as we can be; a comfortable and well-ventilated house to live in; furniture, as much as may suffice, to ensure a moderately decent living; some provision, for a healthy intellectual and social life; as well as some saving, to provide for the future and to increase our aspirations? Now how many men and women and children in India enjoy these conditions of welfare? What is the standard of living in India generally in our days?

Professor Daya Shankar Dubey, M.A., F.E.S., who has published the results of his most careful study of the Indian Food Problem in the *Indian Journal of Economics*, comes to the conclusion that 64.6 per cent of the population lives always on insufficient food, getting only 73 p.c. of the minimum requirement for maintaining efficiency.* The same author, in his recently published book, "The Way to Agricultural Progress", points out that the life of an Indian cultivator is of the simplest kind. In upper and central parts of the country, bread or bajra, jwar or wheat in some cases, accompanied by small quantities of regretable and pulse, form their common dietary. In eastern and southern India rice is substituted for bajra, jwar and wheat. Their food, being mostly prepared from inferior kind of food-grains with little or no ghee, and in many cases being insufficient in quantity, is very deficient in nourishment. Their clothing is rough and cheap and their houses have mud walls and thatched roofs. A few trinkets and holiday clothes constitute their luxury†

In the words of Mr. Manohar Lal, M.A., (Cantab.) poverty, grinding poverty, is a tremendous fact of our economic and therefore national position. This poverty exposes us to the havoc of disease and pestilence, famine and plague; and it makes advance at every step difficult. Professor P. C. Bose, writing the results of his enquiry into the conditions of the rural life of Chotanagpur,

* III; 25.

* Vol. III, part 2, p. 180.

† *Ibid*, p. 1.

states: "The residence of a villager consists on the average of two or three rooms. The houses are generally single huts. The building materials are principally earth, posts and Khapras, sometimes there are thatched cottages. Water-tight leaf-houses are not rare. Brick-built houses are seldom seen. The houses of the richer classes of peasants are roomy, and there are verandahs and granaries. The special feature of every house that will strike even a casual observer is the absence of windows. Absence of cleanliness is very conspicuous in many villages..... Rice is relatively a luxury for the poor. Few villages can afford to take rice regularly. *Marua* and *gondli* constitute the staple food of the poor classes. *Makai* (maize), *Sagarkand* and *Mahua flowers* are food of the villagers for two or three months in the year..... The following things constitute the furniture of an ordinary villager, a few iron or brass utensils, earthen vessels, mats made of date leaves, one or two *Khatias* or cord bedsteads, and *barni* (broomstick). In a rich man's house, besides these, a few more articles are seen. These are pestle and mortar for cleaning rice and pulses, and one grindstone for grinding spices, and several bellmetal pots..... The ordinary dress of a villager consists of three items: one dhoti or cloth reaching as far as the knee, one short coat and a head dress. In winter well-to-do husbandsmen wear a big *chadar*. A coarse shari forms the entire dress of a woman; sometimes she puts on a small jacket. One Charpoi and an earthen pot containing fire placed beneath it—these two constitute the principal luxury of the poor people in winter nights." *

I have quoted the above authorities to show that it is not on account of sentimental observation that I deprecate the low standard of living in India, but I am led by hard facts. It is also evident that the poverty of the masses is not due to any voluntary self-abnegation, but to low earning. What is specially noticeable in this connection is that the low standard of living reacts on the rate of earnings. "It is an economic law of the very first importance that the earnings of any class, whether wage-earners or independent workers like the cultivators, tend to conform to their standard of living, which it is usually, though not always, more difficult to change either upwards or downwards than the average of money income of the class..... There is a case of action

and re-action. The rate of earnings in any employment at any moment may be regarded as the resultant of an equilibrium between the standard of living and the marginal productivity of labour, the latter determining the demand for labour in that employment, the former determining the supply". Therefore it is necessary that a rise in the standard of living and in the marginal productivity of labour should be pushed forward simultaneously. To quote the same author, "a rise in the standard of living without the expansion of the means of gratifying it produces discontent almost as severe as a sudden fall of real earnings. When the standard of living remains unchanged, an increase of earnings simply reduces the amount of work done by people in question." It will be beyond the scope of this essay to consider the ways and means of improving the marginal productivity of the Indian people. That is a subject by itself, and all that may be said here is that there is an urgent need of undertaking, simultaneously, all sorts of agricultural and industrial reforms in the country.

With regard to the raising of the "Standard of Living" the three direct agencies of bringing it are (a) education, (b) travel, and (c) example.

We cannot stop to discuss these factors at length. For those that care we should recommend Professor Daya Shankar Dubey's book. "The Way to Agricultural Progress"* in which he has discussed the problem of educational expansion and reform. It would suffice here to say that there is a crying need of educational expansion and reform. Apart from its untold benefits, right education will have three-fold effect on raising the standard of living: first, it will increase the marginal productivity of our farmers and labourers; secondly, it will refine their tastes and suggest new and more useful methods of consumption; and, thirdly, it will considerably free our folk from the bonds of superstition and custom. We have simply no idea of the economy of money, time and energy that will be affected by improving the methods of production and distribution in agriculture and in industries; or of the changed conditions that will be brought about by a refining of taste and other habits of consumption——when harmful "conventional necessities" like smoking will play

* *Indian Journal of Economics*, p. 552, ... 560.

* Published by Thacker, Spink & Co,

a less part in the consumption of our masses ; or of the tyranny of superstition and custom over our poor ignorant brethren. Says Professor P. C. Bose : " Custom reigns supreme in the villages and sometimes it exercises its influence very tyrannically. For want of funds a man cannot call in a doctor, but when any of his relatives dies, he must spend a large sum ; the dead body must be covered with a new piece of cloth and after the expiration of a certain period he must beg or borrow to give a feast to his relatives or kinsmen. Until he arranges this feast, he will have to remain outside his caste. The trouble of finding funds downs his sense of bereavement"* With regard to travel and example I take the liberty of freely quoting Professor Dubey. With the rapid growth of railways in India, a special facility has been created for undertaking long travels, and our agriculturists are not slow to take its advantages. Thousands and thousands of them are seen frequenting the most important places of India, such as Allahabad, Benares, Hardwar, Muttra, Gaya-Puri, Rameshwar, Madura, Dwarka, Amritsar, etc. A heavy responsibility lies on the public to make these oftrequented places such that the travellers may learn something better about better living and better ways of spending their money. Unfortunately this is not the case, and the pandas, by taking full advantage of the ignorance of pilgrims, try their best to squeeze as such money from them as they can. Much benefit can undoubtedly be done if societies are forwarded in such places whose sole object is to help those people in all possible ways and to place before them the best ideals they can by organizing lectures and distributing pamphlets. In order that *pandas* may be better source of help to pilgrims, it is desirable to follow the example of Baroda and prohibit by law those persons from doing the work of a *purohit* who have not passed a certain qualifying examination to be conducted by a board specially constituted for this purpose. As regards raising the standard of living by example, much good work will undoubtedly be done if some of the educated people begin to live in the villages amongst agriculturists and there teach them by example better ways of living and better ways of spending their income"† We may also suggest the utility of holding district fairs and exhibitions,

dramas and cinemas ; multiplying libraries ; publishing vernacular newspapers, magazines, books, pamphlets, leaflets, etc., organization of lantern shows and illustrated public lectures, construction of parks and play-houses. All these things mean real education. Through education alone will social reform be possible, and unproductive and parasitic institutions will have to be abandoned. Woman will have to be given her proper place in Indian Economy. Many habits of consumption will have to be changed. New facilities for communication and travel will also have to be provided. The use of bicycles may also be encouraged whenever useful. The standard of dietary should be paid particular attention to, particularly in the case of children. The dearth of pure milk and butter, specially in towns, is simply pitiable. A majority of Indians are vegetarians, and milk diet is a necessity for them. And yet how few even of our students and children are supplied with sufficient quantities of pure milk and butter ? There is urgent need of establishing municipal or co-operative dairies in our towns. Cow-protection is the national *Dharma* of Indians——Hindus, Muhammadans and Christians alike——and immediate practical steps should also be taken for the preservation of grazing land.

The above are only a few stray suggestions. No definite schedules can be given, for the standard of living is different for different men at different times under different conditions. I have deliberately avoided controversial points in this short paper. My sole object in writing this has been to draw the attention of Indian economists to the importance of raising the standard of living of the Indian people. I have tried to show that many of the present notions about the 'other worldliness' of the Indians are a result of misunderstanding, and that how far a low standard of living is indicative of and also responsible for the poverty of our country. I have also in a desultory way, pointed out some ways and means of improving our lot. For such improvement, efforts are no doubt being made but there is need of a simultaneous effort in all directions of progress at the present time, for which organized efforts——in towns and villages alike——have to be made by the Government as well as the people of India. The need is crying. Will India not shake off her lethargy ? We have no doubt that she will.

* *Indian Journal of Economics*, Vol. II, part 4, p. 56.

† *The Way to Agricultural Progress*, p. 20.

Paper from East African Bamboo.

The East African Bamboo grows on the high plateaux and mountains of the colony of Kenya at an altitude of from 7,500 to 11,000 feet. The bamboo forests cover large areas, in some cases many square miles in extent.

The principal bamboo forests are situated on the Kikuyu and Mau Escarpments, the Aberdare Mountains, and the slopes of Mount Kenya and Mount Elgon. The nearest edge of the bamboo forest is about three miles from the railway. The forests are well watered by numerous streams, many of which are of sufficient volume to provide power. Since they are situated at a high altitude, the climatic conditions are well suited for Europeans, but not so well adapted to those Africans whose homes are in the warmer parts of the colony. They, however, soon become acclimatized and do not object to living and working in the cold districts.

According to a report by the United States Consul at Nairobi, it is estimated that the cost of felling and transporting bamboos for a distance of half a mile would be from £5 to £6 an acre. This estimate is based on the cost of manual labour and human portage only. Organization and supervision would greatly reduce the cost. A fair amount of unskilled labour is at present available.

Although the yield of pulp from the African bamboo is somewhat low compared with that

obtained from the Indian, the results of experiments show that a good strong paper, suitable for writing purposes, can be produced. About 1.5 tons of the bamboo were heated with an extra strong solution of caustic soda for 12 hours, and a pulp was obtained which bleached satisfactorily and yielded white paper of good quality. The pulp was converted into a pale tinted paper, the yield of which (including loading and size) was found to be 41 per cent of the weight of bamboo treated.

The Government of the Colony and Protectorate of Kenya is inviting offers for the lease of two areas of bamboo forest on the Kikuyu and Mau Escarpments. No tender of less than 2s. a ton will be accepted, the basis of the tender being a royalty payment per ton of air dry pulp. Licenses will be granted to the successful tenderers for periods of 20 years, with options for renewal on terms to be agreed upon. Exclusive right for 20 years will be given the licensee to cut bamboos for the manufacture of paper pulp over an area to be selected by him in conjunction with the Conservator of Forests within five years of the date of the license. The areas are estimated to be capable of yielding annually 40,000 tons and 20,000 tons of paper pulp respectively. Offers must be forwarded to the Conservator of Forests, Nairobi, Kenya Colony, on or before April 1st, 1923.

Purchase of Stores.

The following procedure is to be adopted to ensure that invitations to tender receive due publicity:—

Manufacturers and major firms of suppliers of stores have drawn attention to the fact that it would be of great assistance to them if they could count on all requirements of railways and Government departments being published in one official journal known and readily available to the public. At present there is no uniformity of practice in the matter of publishing tender notices and the Government of India have accordingly decided that in addition to advertising in papers with wide general circulation the *Indian Trade Journal*, the weekly organ of the Commercial Intelligence Department, will be the most suitable official medium for this purpose. Agents of Railways and the Chief Controller of Stores, Indian Stores Depart-

ment have been requested to furnish the Editor, *Indian Trade Journal*, with a summary of all invitations to tender for goods to be purchased in India when the value of the tender amounts to Rs. 5,000 or more. The summary will specify the Officer or Department calling for tenders, the class of articles required, by what date and to what authority tenders should be submitted and from whom copies of the detailed specifications and tender forms will be obtainable. Other Government Departments have been invited to adopt a similar procedure as far as practicable.

Mr. Max Pemberton, who was among Viscount Northcliffe's oldest friends, is engaged upon a volume, which Messrs. Hodder and Stoughton will issue immediately, under the title, "Lord Northcliffe.—A Memoir."

Rubber in India, 1921.

By D. N. Ghosh, Officiating Director of Statistics, India.

Rubber is grown mainly in Southern India, Burma, and Assam. The statistics dealt with in this publication are based on data furnished by rubber planters, and relate to the area and production of rubber during 1919, 1920 and 1921, with special reference to the number and extent of plantations and the daily average number of persons employed during the year 1921 and the stock of dry rubber held on the 31st December 1921.

The number of plantations in the year under review was 1,016, covering an area of 196,990 acres as against 892 with an area of 204,663 acres in the preceding year. Newlands planted with rubber in the estates during the year 1921 so far reported amounted to 5,635 acres, and the area of old cultivation abandoned to 4,990 acres, showing a net increase of 645 acres over the total area of 124,025* acres (revised) in 1920. The total area under rubber in the year under report was thus 124,670 acres, which is practically the same as in the previous year, of which only 60,721 acres were tapped. Of the total area under cultivation, 47 per cent was in Burma, 32 per cent in Travancore, 9 per cent in Madras, 7 per cent in Cochin, 2 per cent each in Assam and Coorg and 1 per cent in Mysore.

The total production of raw rubber during the year is reported to be 9,056,430 lbs. (Hevea 8,995,780 lbs., Ceara 47,520 lbs. and *Ficus elastica* 13,130 lbs), as against 13,788,908 lbs.

* Excludes an area of 142 acres in Bengal, which was not workable during the year.

Since the introduction of mining regulations in Tanganyika Territory, prospecting has been progressing on a considerable scale, particularly in the Mwanza area, and important gold discoveries are now reported. It is stated that a new reef of high value has been located. The prospector working on the claim has, by the primitive method of hand-crushing and amalgamation in the pan, succeeded in recovering over 100 ounces of gold, and a test made by a Government mines inspector, who used the same methods, indicates a bearing capacity of about 3½ ounces to the ton. Outcrops of visible gold have been uncovered. The Germans operated a number of small gold-mines throughout the same area, and while undue optimism has not been engendered

(Hevea 13,655,094 lbs., Ceara 76,643 lbs. and *Ficus elastica* 57,171 lbs.) a year ago. The yield per acre of tapped area was 199 (243) lbs. in Burma, 93 (222) lbs. in Cochin, 170 (199) lbs. in Travancore, 54 (142) lbs. in Madras, 29 (108) lbs. in Coorg and 53 (62) lbs. in Mysore, the figures for 1920 being shown in brackets. There was a general decrease in production in the year under review, especially in Madras, Coorg, and Cochin, which is attributed to low prices and the slump in the rubber market, and also to the Moplah rebellion.

The daily average number of persons employed in the plantations during 1921 was returned at 29,404, of which 25,772 were permanently employed and 3,632 temporarily employed, as compared with 52,466 (40,804 permanent and 11,662 temporary) in the preceding year.

The total stock of dry rubber held on the 31st December, 1921, was estimated at 3,115,079 lbs. (Hevea 3,098,000 lbs., Ceara 11,520 lbs. and *Ficus elastica* 5,559 lbs), as against 4,909,769 lbs. (Hevea 4,926,617 lbs., Ceara 55,895 lbs. and *Ficus elastica* 17,257 lbs.) reported on the corresponding date of 1920.

The export of rubber by sea from British India to foreign countries during 1921-22 amounted to 11 million lbs., showing a decrease of 21 per cent as compared with the previous year. The United Kingdom absorbed 63 per cent, Ceylon 21 per cent, the United States of America 9 per cent, and the Straits Settlements 6 per cent, of the total exports. Madras accounted for nearly 62 per cent, and Burma 38 per cent of the total trade.

by the latest discovery, it is pointed out that German operating costs of approximately 50s. per ton as against a South African expert's estimate of 29s. 6d. accounted largely for the unprofitable nature of the German undertakings. The necessity for capital and expert operation is acknowledged. Dr. Merensky, the well-known geologist, and another representative of the influential Corner House group of South African mining financiers, visited Tanganyika recently on a special mission. The only mineral successfully mined in the Territory at the moment is mica, and in the direction prospectors are also busy. The administration has been extraordinarily backward in encouraging mineral research by private individuals.

The Prospect for Industrial Peace in America.

By Virgil Jordan.

Mr. Samuel Gompers, the veteran leader of the American Federation of Labour, recently expressed himself as most hopeful of the future of industrial relations in the United States and prophesied an era of good-will between employers and workers. Both parties, weary of industrial strife, would recognize and hold fast to the idea of co-operation and effectually banish such turbulent struggle in the industrial life of America as has marked the years since the beginning of the war.

So far as its relation to current facts goes, this prophecy and picture of the present situation would seem to be the product rather of a good dinner than of any appreciation of the forces that are all too apparent in the attitude of both sides in the present crisis. The past eight years of industrial strife, rising and falling with war prosperity and the subsequent depression, have revealed characteristics in both labour organization and employer organization which are far from hopeful for the future peace of American economic life. The war period brought out clearly some of the vicious tendencies in the labour movement; and the great service of the present crisis in the railroad and coal industries is that it has presented in bolder outline, for the public to read and grasp, some of the formerly unbelieved charges brought against organized employers in the United States. The public has been indirectly the victim of both tendencies, and it would seem as if there could be no prospect of industrial stability till it intervenes in its own interest and adopts effective means for its own protection.

During the war, under the shelter of the war emergency and the need for unprecedented production, the unions climbed into the industrial saddle and rode the horse to the limit. In nearly all industries they built up net works of regulations and restrictions of production, originally aimed at protecting themselves against exploitation, but developing soon into methods of exploiting the employer and hence the public. The strike in war time was an effective weapon to enforce their demands, and the utmost the public could do in the emergency was to avert suspensions of production by Government adjustment of disputes through semi-official machinery. The outcome of these adjustments was usually to the advantage of the unions, since the sole popular test of the efficacy of the machinery was in its

ability to avert strikes by whatever means. The War Labour Boards were essentially means of maintaining continuous production by guaranteeing the unions their demands. This meant in the long run that the Government, and hence the public, had to bear the loss. The result was the enormous burden laid upon the public treasury through the shipyards and the federal administration of the railroads. In other industries the employers took the loss themselves and passed it on to the consumer. The whole picture of the war time activities of the unions is, in short, one of the use of organized power to exploit the public.

This led inevitably, after the war, to a reaction to the other extreme, in which the organized power of employers was used to similar ends. The whole of the post-war struggle between employers and labour has arisen from the employers' effort to wipe out the wasteful restrictions and limitations which the unions built up during the war, but this has been carried farther. The unions have felt that, since the war, they have been asked to give up, along with the extra advantages won during the war, certain fundamental rights upon which their existence and power as unions has depended.

The railroad unions, for instance, during the war, as result of Government operation of the roads succeeded in establishing the principle and machinery of negotiating working rules and wages on a national scale. Where this led to the imposition on the roads of a technical eight-hour day, with heavy payments for overtime, complicated restrictions regarding the classification of railroad labour, apprenticeship, seniority rights, all applying to all railroads alike, regardless of their differing situation, it put a heavy and unjust burden on the transportation system of the country at enormous cost to the public.

The principle of national adjustment of wages and working conditions with the unions was, however, probably a sound one and necessary to the very existence and power of the unions. When the Railroad Labour Board, set up after the return of the railroads to private operation, modified the terms of these national agreements to permit adjustment to the situation of individual railroads, it did the public a service. But when the railroad executives, combining for national action themselves, have sought, as in the present

strike, to deny the unions the right of national action and refused any settlements except with local labour bodies, they aim to disrupt the railroad unions. It is doubtful if this policy can be defended from the point of view of public interest. The railroad workers form a large part of the industrial wage earners of the country, and they cannot be subjected to the arbitrary will of the managements without economic damage to the country.

In the building trades the vicious restrictions put upon labour by the unions can be even less defended than in the case of the railroads. The tactics of employers aimed to remove these restrictions would have been wholly good if, at the same time, or indeed first, the employers in many cities had not refused all dealings with the unions and sought to operate on what is called the open shop, really amounting to a refusal to employ union men as such. In the building trades the whole strategy of the employers has aimed rather to break up the power of the union than to remove the restrictions. In other words, to improve their own position rather than further the interest of the public.

This tendency is more clearly apparent in the coal industry, where the interferences of the union in the form of oppressive working rules have been so slight as to have made little difference. Here the post-war tendency of the operators has aimed directly to disrupt the union as a national bargaining force, exclusively from the point of view of their own

interest. Due to the Government interference during the war the operators had to pay higher wages, but these were promptly passed on to the public, and the public has been willing to pay the cost if the coal was forthcoming. There has been little question of reducing the cost of coal by abolishing hampering rules of the miners' unions. The question for the operators has been to break the power of the union so as to achieve free control of the industry in every way. Yet in the coal industry more than in any of the others mentioned the minor needs the protection of union organization to prevent a degree of exploitation which would mean reducing half a million of the population below the subsistence level. The obvious need in the coal industry is a reorganization and degree of Government supervision which will assure the country's coal supply, and this cannot be done without dealing with the miners as a body, through their own organization.

In these and other industries, the reaction of employers to the war developed power of labour has tended toward extremes which, instead of protecting the public interest, have given rise to new dangers and made the prospect of industrial peace more problematical than ever. Both during and since the war the public has been victimized, and the drift in the present crisis is clearly in the direction of greater public control in which both unions and employers will be restrained from too great exercise of organized power.

U. S. A.—Advice to Intending Travellers.

Any applicant for a passport for the United States of America should produce in the first place :—

(1) A certificate giving his status and occupation during the two preceding years.

(2) If the applicant is a student evidence in the form of school certificates or similar documents proving that he is a graduate of some recognized educational institution in India.

(3) A document setting forth that the applicant, if a student, has or will be furnished with sufficient funds to defray his expenses to and from the United States and while pursuing his studies or during his stay in the United States.

(4) In the case of applicants not students some assurance that they are in funds and will not become a public charge.

These documents should be attested by the

local authorities and forwarded to the nearest American Consul, who, if satisfied that the applicant fulfils the conditions of the American Immigration Regulations, will attest and return them. Thereupon a passport and endorsement for America will be issued to the applicant who should call at the American Consulate in person to obtain the Consular visa which he will receive if, on being questioned, he satisfies the consular authority as to his *bona fides*. The following is the definition of a student furnished by the American Consulate General. "To constitute a case of a *bona-fide* student the alien should be one who has reached the higher branches of learning in his studies before departing for this country, is coming to the United States for the sole purpose of pursuing such studies with means available for the purpose, and who intends to depart at the completion of such studies."

Notes from America.

New York, July 31, 1922.—A graphic picture of American railroading is contained in a twenty minutes address by R. H. Aishton, President of the American Railway Association, in which he occupied his time by telling his auditors—the Academy of Political Science—just what the railroads were doing as he talked. The yearly figures, Mr. Aishton noted, are too large to understand without a good deal of mental strain. What they did, what they earned, what they spent, in the course of twenty minutes is in easily comprehended numbers, and the result is a statistical presentation that is as interesting as it is novel.

He went on, as quoted in *The Railway Review*—

"I have been allotted twenty minutes. During that twenty minutes the energy, developed by the railroads, is equivalent to moving a train consisting of a locomotive with ten freight cars, carrying 311 tons of revenue-paying freight, with two more freight cars containing 38 tons of company freight that doesn't produce revenue, with two passenger cars, containing 38 paying passengers, together with the employees necessary to operate the train, with the necessary postal, baggage and express cars, and a little old red caboose, a distance of 37,500 miles, or once and one-half times around the earth at its greatest circumference.

"What do they get for performing this service? The year 1914 is taken for comparison, because it marked the start of the European War, the beginning of all our troubles:

"In 1914 every twenty minutes the gross earnings were \$115,347.

"In 1921 every twenty minutes the gross earnings were \$209,874. An increase of eighty-two per cent.

"In 1914 every twenty minutes the operating expenses were \$83,844.

"In 1921 every twenty minutes the operating expenses were \$173,652. An increase of 107 per cent.

"In 1914 the payroll for twenty minutes, \$50,888.

"In 1921 the payroll for twenty minutes, \$106,579. An increase of 109 per cent.

"The above indicate what's the matter, and beyond all that consider this also.

"In 1914 every twenty minutes there was paid in taxes, \$5.159.

"In 1921 every twenty minutes there was paid in taxes, \$10.526. An increase of 104 per cent.

"In 1914 every twenty minutes the net railway operating income (which is the amount left after payment of expenses and taxes) was \$25,158.

"In 1920 it practically disappeared, being only \$822.

"In 1921, however, with an increase of 3,091 millions in investment over 1914, the net operating income every twenty minutes was \$22,755.

"In other words, whereas the book value increased eighteen per cent between 1914 and 1921, the net railway operating income earned on the investment thus increased actually decreased 9.5 per cent.

"What are the railroads doing to bring about economy and efficiency?

"In 1912, although the times were deprest, as was the case in 1914.

"They handled 7.7 per cent more revenue ton miles than they did in 1914.

"They handled 8.0 per cent more passenger miles.

"They did it, however, with 10.6 per cent less train miles, and the train mile is what creates expense. There must have been economy and efficiency manifested there surely.

"In 1920, with a large business, as compared with 1914, with a light business:

"There was an increase of forty-four per cent in revenue freight ton miles.

"There was an increase of about thirty-six per cent in revenue passenger miles.

"Yet this was accomplished with the same train miles, practically, as 1914. As a matter of fact, it was 300 miles less every twenty minutes than in 1914. Truly a notable record!"

He brought his twenty minutes talk to a close by outlining where, in his opinion, lay the future field for economy—heavier car loading and more miles per day.

ACTIVITY AMONG MANUFACTURERS.

New evidence of the increased activity of the manufactures of the United States comes to the surface in the latest reports of their importation of manufacturing material of the class for which they reply upon foreign countries. Official reports of the value of the manufacturing material imported in May of the current year show, says the Trade

Record of the National City Bank of New York, an increase of thirty-three per cent in the value of the raw material imported as compared with the same month last year, and an increase of over sixty per cent in the value of the manufactures for further use in manufacturing.

This startling increase in the value of manufacturing material drawn from abroad in the latest month for which figures are available is the more interesting, in as much as the prices of many of the articles so imported are now materially lower than a year ago. Thus the advance in the total value of these materials imported really means a larger increase in quantities than the mere figures of value would indicate. While the details of the May importation are not yet available, those of April, in which the increase was also large are at hand and show that the price at which many of the manufacturing materials were imported was less than that of a year ago. Manila, hemp, for example, imported in April 1922, came at \$134 per ton against \$255 in the same month of last year; sisal \$109 per ton against \$146; India-rubber seventeen cents per pound against twenty-one cents; pig iron \$32 per ton against \$62 in the same month of last year; copper twelve and one-half cents per pound against fourteen cents; and ground wood pulp \$30 per ton against \$42. In the textiles, however, cotton, wool and silk, the 1922 prices are higher than those of a year ago, and this is also true of hides.

A study of the figures of quantity of manufacturing materials now being imported gives further evidence of the increased demand of our manufacturers upon the outside world. Hides and skins imported in April, 1922, although at slightly higher prices than a year earlier, aggregated 32,000,000 pounds against 22,000,000 in April of last year; India-rubber 43,000,000 pounds against 26,000,000 a year earlier; unrefined copper 19,000,000 pounds against 10,000,000; furs 8,860,000 pieces against 4,906,000 in the same month of last year; pig tin ten and a half million pounds against two and a half million in April, 1921. In cotton, wool, silk and fibres, however, the quantities in April 1922, are less than in the same month of last year.

While it is not to be assumed that prices are "down" in all the manufacturing materials or that the quantities of all classes show an advance, the fact that the total value of manufacturing material imported in May, 1922,

is \$127,000,000 against \$90,000,000 in the same month of last year, suggests that the reports of increased activity coming from the great manufacturing centers are quite justified.

NEW CITIZENS IN NEW YORK.

According to the Annual report of the head of the United States naturalization board for the district including New York City, and most of New York State, 150,000 aliens were admitted to citizenship in the year, ending June 1922, one-third of them being Jews. More natives of Russia than of any other country were naturalized. Italians came second. Of the 45,000 applications for citizenship considered during the fiscal year, 41,000 received citizenship. That means that, including wives and minor children, about 150,000 individuals ceased being aliens in the United States, and that nine per cent were denied the rights of citizenship. The refusals were not mainly because of illiteracy. The alien is not required to read or write English, but merely to speak it, in order to be admitted to citizenship.

AGRICULTURAL EXTENSION WORK.

Two items sent out recently by the United States Department of Agriculture bear witness to the ability of this department to place its resources at the disposal of the individual. According to the first item, farm women enrolled in agricultural extension poultry clubs last year raised 2,083,127 standard-bred chickens. They received for chickens and poultry products sold, \$1,617,047.83, in addition to the supply produced for home use.

The other item informs us that one hundred and thirty-six thousand four hundred and forty-one boys and girls were enrolled in agricultural extension clubs in 1921 for training in various phases of live-stock work. These junior farmers owned, last year 76, 148 head of farm animals and 554,286 fowls, representing a total value of \$3,605,176.

TRAIN ACCIDENTS BEGIN TO DECLINE.

With deaths in automobile accidents on an increase in the United States, there is a slight comfort in recent statistics concerning train accidents, which show that the programme of education carried on by the railroads is gradually having an effect.

According to an analysis which the Bureau of Statistics of the Interstate Commerce Commission recently completed, a reduction of 1.4 per cent is shown in the number of fatalities and 5.8 per cent in the number of persons injured as a result of train and

on the left hand side, and all operated by the engine through a system of gears. Here is a pulley 13 inches in diameter and 7 inches wide that drives at belt speeds standard for farm machinery. The pulley itself consists of a hollow casing open at one end. The engine provides ample power to grind feed, saw wood, or operate the silage cutter or the threshing machine.

The pulley can be removed in less than three minutes by loosening a single nut. With the pulley off the axle is in the shape of a small capstan winch that is capable of a pull of 3,000 pounds. Although this winch is carried at all times on the shaft, it is operated by reduction gears independent of those driving the pulley. They operate only when the winch is being used. To provide a better lead for the ropes in hauling hay a roller guide is mounted on the truck body immediately behind the driver's seat.

Next to a source of power, the modern farmer's chief need is for a pump, and the truck helps him there with a centrifugal pump with a capacity of 40 gallons a minute, a suction of 12 feet, and working pressure of 75 pounds to the square inch. It is fitted with a suction and a discharge hose, strainer and nozzle, so that it may be used for putting out a fire, laying the dust, washing the machine or watering stock.

From the top of the pump leads the spraying manifold. This has fittings for a 2-inch suction and discharge connection, and four one-inch spray line connections. In using the truck as a spraying machine the tank holding the solution is placed on the body and the suction pipe is placed in it. The four nozzles provide work for as many men as can usually be employed in one location. The same apparatus can be employed to spray liquid fertilizer.

TOO MANY CONTRACTIONS IN THE AUTOMOBILE.

Speaking of the multiplicity of instruments and attachments of the automobile, a leading and widely-known United States motor car manufacturer says:—

"Instruments on the dash are, of course, inevitable. No person wants to drive without a speed motor, an ammeter, and an oil gage. But why a clock? Why an assorted collection of dials that make the inner elevation of one's petroleum buggy resemble the control board of a central power station or an overcrowded pawnshop window? Why the present mad race for a multiplicity of nicked protuberances in the cock-pit of the road cruiser?

"Perhaps the answer is to be found in a recent advertisement which considerably tickled our risibilities. The better part of an expensive page was devoted to picturing the supreme delight with which an owner might look upon the automatic cigar lighter that exclusively features the advertiser's machine—how from his proud eminence in this car he might look down with amused contempt upon the unfortunate driver whose machine leaves him at the mercy of the match-box when he wants a smoke! We have no doubt but that somewhere there exists a man who would buy the XYZ car to get the cigar lighter. But are there enough of him to advertise to? We have no doubt whatever that some folks will prefer the car with fifteen knobs dials to the one which can boast of but fourteen. But, from a common-sense view point, would not our cars be more comfortable if they did not look quite so much like an instrument maker's laboratory?"

2,000,000 TONS OF SAND USED IN MAKING GLASS YEARLY.

Over two million tons of sand are used in the United States each year in making glass. The actual manufacture of glass is carried on chiefly in the cities of the natural gas regions, as natural gas is ideal for heating the great pots which often hold thousands of pounds of materials requiring very high temperatures to reduce them to molten glass.

Not the least interesting phase of the manufacture of glass is the making of glass lamp chimneys. In the process of making these shades glass sheets and first cut into identical sections to fit the dome or shade being made. This is done by hand with a glass cutter's wheel a tiny steel wheel of the hardest temper and sharpest edge. The cut leaves of glass are taken to the fire-proof brick furnace, which is about 4 feet square inside and is fitted with four roaring gas burners. The flames from these burners curl against the oven top and are reflected against the center. In front of the furnace on a table are ranged a number of molds resembling huge metal flowers one foot and two feet in diameter. One of the segments of glass is fitted on to each of the petals of these grotesque blossoms, the size, shape, curvature and number of petals on each mold corresponding to a pattern of a particular lamp. These are then placed in a roaring oven by a long-handled hook and subjected to a tremendous degree of heat in order to make the glass melt and fall into the mold to which it is attached.

Canadian Trade and Finance.

Montreal, September 1, 1922.—A very useful barometer by which to gauge the general trend of business is afforded by statistics of commercial failures. There are, at all times, a certain number of firms and of individuals who are carrying on business at or near the margin of safety. The degree of success with which these marginal enterprises are maintaining their position under difficult circumstances and keen competition normally indicates, with a fair amount of accuracy, what the condition of business really is at the time.

During the year 1921 a number of influences combined to produce a high degree of mortality among commercial concerns in Canada. In the period immediately following the armistice a large number of new concerns entered the business field in a small way. While prices were tending upward, most of these firms were able to maintain themselves, but the unfavourable business conditions last year took a large toll, principally of those who had not sufficient capital. Many larger concerns as well, who were caught with heavy stocks of merchandise, suffered severe losses because of falling prices. These declining prices combined with the general decline in purchasing power, and the consequent decrease in sales, resulted in a number of the weaker dealers becoming insolvent. Then, too, there were, undoubtedly, a number of firms who finding themselves in difficulty took advantage of the new Bankruptcy Act and went into liquidation.

As a result of these and other circumstances mercantile failures in Canada, as well as the liabilities involved, showed a considerable increase in 1921, and the first half of 1922. According to figures compiled by Bradstreet's, the number of failures and the assets and liabilities involved, for each of the past ten calendar years for Canada and Newfoundland were as follows:—

Year	No. of failures	Assets	Liabilities
1912	1312	\$5,611,675	\$12,355,282
1913	1827	8,140,990	16,650,450
1914	2890	13,527,566	30,741,292
1915	2626	14,354,692	32,380,501
1916	1772	6,380,688	15,747,175
1917	1110	6,225,056	13,661,301
1918	815	5,355,527	12,417,036
1919	626	5,104,534	10,120,232
1920	979	11,477,757	22,139,575
1921	2393	23,330,859	51,083,158

As the table indicates, the figure for liabilities involved in failures during 1921 shows a substantial increase over the figure for the last pre-war year, 1913, namely, an increase of 207 per cent. The corresponding figures for failures in the United States during 1921 shows an increase of 157 per cent over the 1913 figure. It must, of course, be borne in mind that assets also show marked increases. Part of the increase in each case is due, of course, to the change in price levels during the period.

The question of most vital interest, however, is whether or not the period of greatest stress is behind us. A decreasing total of failures in the United States during the successive months of the present year would seem to indicate a definite improvement in conditions. Canadian figures disclose a similar situation, in spite of the extremely high business mortality rate during the first half of the year. The record of solvency during the second quarter is an improvement over that of the first quarter.

FOREIGN EXCHANGE.

Throughout the second quarter of the year the favourable movement of Canadian exchange, which had been in progress during the first three months, continued. On the 20th of April the discount on the Canadian dollar in New York was 2 per cent. The upward trend continued until in the middle of May the discount was 1 per cent, and this shaded to $\frac{7}{8}$ shortly afterwards. Towards the end of June a slight reaction set in, induced, no doubt, by the anticipation of the 1st of July payments. Sterling, in spite of the rather unsatisfactory conclusion of the Genoa Conference, reached a new high in New York on the 10th of May, when bankers' sight bills were quoted at \$4.45. Although there was a slight decline, from this high point, the rise was well maintained during the rest of the month. The firmness of sterling at this time was ascribed to the general improvement in the economic and financial position of Great Britain. About the middle of June, however, sterling quotations weakened and later broke sharply, cable transfers being quoted as low as \$4.37 $\frac{1}{2}$. This lower level, varied by slight occasional recoveries, continued until the end of the quarter.

Continental exchange, principally francs, showed a tendency to respond to the developments at the Genoa Conference, and such factors as the temporary dissension between

Great Britain and France, and the signing of the Russo-German pact had a depressing influence on rates. A substantial recovery, however, occurred towards the end of May; French francs remained relatively firm, fluctuating between 9.05 and 9.24 cents in New York until about the 12th of June when the downward movement recommenced, the low point being 7.80½ cents on July 8th.

The German mark also appeared to be affected by the proceedings at Genoa. In addition to fluctuations which were attributed, at the time to this cause, there was a gradual decline virtually all through the quarter, the mark dropping from about .33 cents in New York on the 1st of April to about .26 cents at the end of June. The issue of paper money in Germany has continued unabated, until at the present time the currency outstanding has passed the 150,000,000,000 mark.

Little change took place in the South American exchanges during the period. The Argentine peso showed strength; from a quotation of 34.58 cents in New York on April 6th, it rose to 36 cents at the end of June. The Brazilian milreis stood at 13½c. on the 1st of April and closed at the end of June at 13¾c. with very little fluctuation between these two dates. The Uruguayan peso opened at 79¼c. and closed at the end of June at 79¾c., the high and low respectively being 83 and 76½. The Columbian dollar varied between 91 and 92½.

EMPLOYMENT.

During the first half of the present year, there was a marked improvement in the employment situation throughout Canada. With the exception of two or three slight set-backs, principally in the latter part of January and of March, the percentage of employment has continued to increase steadily. A number of factors have contributed to this increase. In the first place, immigration fell off very considerably during 1920 and 1921, and consequently at the beginning of the present year there were fewer men to be absorbed into the various branches of industry. The beginnings of improvement in business, too, created a demand for the services of more men in trade and transportation enterprises. The speeding up of certain branches of manufacturing called for additional help, especially in those industries which had been closed down entirely, or which had been operating on a part-time basis. The lumber and pulp industries, for example, absorbed large numbers, as did also the mining industry, and the construction and maintenance of highways and railroads. The increase which took place in

building construction also helped the situation very substantially.

With the exception of a few districts in the northern parts of Alberta and Saskatchewan where serious drought occurred, excellent growing conditions continued, in the west, right up to the time of cutting.

The usual midsummer lull has been felt during the past few weeks in the wholesale and the retail trades throughout Canada. Stock-reducing sales are prevalent in many districts, but, for the most part, the public have been buying only for immediate requirements, especially in eastern cities. Indications of improving business, however, are not lacking. In those sections of the country where crop conditions have been satisfactory, business has increased and building activity in certain sections has helped hardware merchants and builders' supply houses.

There has been a considerable development in the building industries especially in the provinces of Ontario and Alberta. Construction contracts awarded in Ontario during July amounted to \$15,033,700, the greater portion of which was for residences. As is usual, speculative building has been the most active. Much greater development, however, in the construction of buildings for business purposes is anticipated in the near future. In Alberta also the increased building activity relates chiefly to residence construction, and especially of medium-priced houses although a few large industrial contracts have been awarded.

The outlook for the lumber industry in British Columbia continues to be satisfactory; coast and mountain mills are still active. The eastern Canadian market for British Columbia lumber seems to be favouring the local and American product at present, and business with the Orient has decreased. The prairie market, however, is quite satisfactory. Prices advanced during July and there is a continued tendency towards firmness. In Ontario the demand is active; retail yards are kept busy and shortages are reported in one or two lines. In the Maritime Provinces, prices show little indication of strengthening. The American market offers fair demand, but dullness continues in the British market.

In spite of labour troubles, increased activity is reported in certain branches of industry. In the central west, demand is reported to be better and prospects for future business are considerably improved. The textile industries in Ontario and Quebec continue to be quite busy. Tire manufacturers are working overtime

and the paper companies are still fully employed. As is usual at this time of year, the automobile trade is beginning to slow down. Manufacturers of agricultural implements look for renewed activity as a consequence of the excellent crop. In other lines, however, business is quite dull. There has been a slight falling off in the boot and shoe trade, while the clothing, furniture, and piano industries are quiet. The production of steel has shown some improvement, but is now being affected by the shortage of coal.

COTTON.

Considerable improvement in weather conditions has taken place since the publication at the end of July, of the official estimate of the cotton crop by the American Bureau of Agriculture. On the other hand, the boll weevil has been active in some sections, and August is the month of deterioration in cotton. The crop estimate of 11,449,000 bales, in comparison with a ten-year average yield of 13,053,000 bales was considered unduly high by some authorities in the trade. Cotton prices have been affected recently by current conditions such as the uncertainty attendant upon the coal and transportation strikes, and, partly, also, by the probable decrease in foreign demand. More than half the American cotton crop is sold abroad, and of this quantity, Central Europe absorbs a large percentage. Germany, the second largest buyer, took practically a quarter of the 1921 crop. The decline in Central European exchange, however, has materially lessened purchasing power even in comparison with last year and European demand has thus become a more uncertain factor.

COAL.

In view of the present labour troubles in the coal industry, and in consideration of the partial dependence of Canada on American coal, a brief analysis of the world production and visible supply of coal is of interest. In 1920, the amount of coal produced in Canada was 16,623,598 tons, and the average annual production during the ten years from 1910-20 was more than 14,000,000 tons. This is less than half the amount that Canada requires, the balance being imported mainly from the United States. The latter country, however, imports a small amount of Canadian coal as well. Since the great industrial region of Canada, comprising Ontario and Quebec, contains practically no coal, it is therefore necessary to import annually about 4,750,000 tons of Pennsylvania anthracite and a much

larger amount of bituminous coal from the northern Appalachian region. At the same time, Canada exports varying amounts of coal from New Brunswick and Cape Breton to the New England States, and a certain amount of Alberta and British Columbia coal goes annually to the north-western States. The exchange of coal between Canada and the United States thus is affected only slightly by political boundaries; its distribution is determined rather by the cost of transportation. The Canadian visible supply of coal for the twelve months ending with April, comprising all coal imported or mined, less exports, was 30,345,000 tons, against 35,562,000 for the previous twelve months.

The world's total available reserves of coal were estimated by the World Geological Congress, which met in Canada in 1913, at about 7,397,553 million metric tons. Of this total the United States has the largest share, namely, 3,838,657 million tons, or about 52 per cent of the total; Canada stands second with 1,234,260 million tons, or 17 per cent of the total; China has about 995,587 million tons, Germany approximately 423,356 million tons and the United Kingdom 189,553 million tons.

In regard also to production, the United States ranks first. During 1921 the total world production, according to a statement recently published by the National City Bank of New York, was 1,120 million tons, in comparison with 1,342 million tons in 1913. Last year the United States produced 441,426,000 tons, or about 40 per cent of the total. The United Kingdom produced 163,000,000 tons which, however, on account of the British coal strike last year, was much lower than the average annual British output.

An American syndicate with a £10,000 plant is working an area of 100 acres near Inverell (New South Wales) for sapphires. Inverell is 479 miles north from Sydney, and at various times sapphires have been found in the district, but the casual discoveries have never been exploited. The syndicate has already removed thousands of tons of soil and is preparing the way for larger operations. The sapphires are fairly numerous, but are mostly low grade. They have often been picked up in old river beds. It is intended to use the low grade stones for various industrial purposes. The better stones occasionally found will command a good price. The lead extends about two miles, and other syndicates are taking up leases.

Industrial Notes from the United States.

By Alfred T. Marks.

A PHONOGRAPH DISC INVENTION.

Washington D.C., U.S.A., July 31.—Attracting much attention in the United States, in view of its possible uses in commerce and otherwise, is a non-breakable blank disc for phonograph records, made of metallic composition, which has recently been patented here and is now being placed on sale extensively. The new records are not limited to any one kind of reproduction, but will record the voice, musical instruments, band or orchestra.

This new record is made in six, eight and ten inch sizes, and permits recording and reproduction of any sound without changing the reproducer of an ordinary phonograph. Ordinary steel needles are used to make the record and to play it.

The records are of about the same weight as steel and have the appearance of aluminium. The actual composition of the discs is, of course, kept secret, but the metal is comparatively soft, and the expansion and contraction is not as great as in wax and rubber records.

In making the record on a blank it is possible to speak into the sound box of an ordinary phonograph and the impressions will be recorded on the disc. Better results can be obtained, however, by using a special reproducing horn which can be attached to any machine by merely placing it on the turntable. It is stated that the record can be played 1,000 times with a steel needle or 3,000 times with a wooden needle.

An instrument is now under development and will be placed on the market for recording on these phonograph disc blanks the sound waves sent by radio-telephone. The use of this instrument will permit persons to make permanent records of lectures, commercial information and statistics, industrial reports, concerts, etc., being sent out from broadcasting stations. It is claimed that the metal discs will record about 85 per cent of the actual sound volume. Unlikely as it may seem, the metal records do not give the voice or music a metallic sound when reproduced.

It is pointed out that because of the ease with which these records can be made and the almost indestructible character of the discs, it will be possible for persons travelling to send home spoken messages by mail in place of written letters. In this case it would only be

necessary to speak the message into any convenient phonograph, attach postage to a label on the disc, address it, and drop it in the mail box. When the record had been received and heard by the home folks it could be re-addressed and sent to other members of the family. Likewise, business communication and commercial messages can be sent in to the home establishment, and become permanent records.

THE FARMER AND THE RADIO.

It is said by the United States radiophone experts that that feature of radio activities which is proving such a tremendous advantage to the rural dweller and farmer will mark the most important advance of the new and wonderful "science of the air." As applied to the United States it may be noted that surveys show that 32,000,000 persons, or almost one-third of the population of this country, live on farms. Not many years ago a farm was considered to be one of the most isolated places on earth, and as we look back with modern improvements casting a light upon the past, it is easy to believe that a farm life must have grown extremely monotonous at times. Improved methods of transportation came first to place the farm in closer contact with the city. Then the telephone brought the country still nearer the city. But even to-day there are still hundreds of thousands of farms out of tune with the world.

Now a great new force with possibilities possessed by no other form of communication has developed to a stage where it not only can connect every farm with the nearest city but with the entire world, even with ships far out at sea.

Radio is destined to make life for the country dweller all over the world much more enjoyable. The waves of wireless not only afford a wide distribution of the latest news, but also vital agricultural news, such as market and crop estimates, prevailing prices for farm products, transportation information, weather reports, and almost no end of other information of various kinds. By merely turning one or two dials the farmer and his family can now enjoy the world's greatest singers, bands and orchestras and speakers day after day, or on summer evenings after the day's toil is over the farmer may "tune in" just as easily as city dwellers and listen to the latest songs by

a Broadway musical star. At a radio concert the sign "S. R. O." (standing room only) is never displayed, all the world is the audience, and the 32,000,000 persons living on the farm lands of the United States can enjoy the recreation afforded by radio at the same time as their friends in the city.

It is predicted by radio authorities that within a very few years the rural dwellers of all countries will be in touch with the world and all of the world's activities by radio.

It may not be amiss here to refer briefly to the requirements for farm radio connection. It is difficult for a person not having an understanding of radio to select a receiving set best suited to his needs. In purchasing a set the distance from the nearest broadcasting station will be a determining factor. A reliable receiving set capable of picking up the agricultural news and radio entertainment will range in cost here in the United States from \$50 to \$150.

These prices cover the range from a single vacuum tube set to a two-stage amplifier complete. A crystal detector set, which will cover a radius of twenty-five miles, costs here between \$10 and \$25, depending upon the phones and other instruments used.

The most efficient antennæ to use for the farm is a single copper wire about 100 feet in length. The ground terminal of the set can be connected to the radiator or cold water pipe. The installation and operation of a well-constructed receiving set is very simple, and no technical knowledge is necessary.

A TYPEWRITER WHICH WRITES WORDS.

Speed and convenience in typewriting should be considerably increased by the use of the newly-invented and patented machine just placed on the market here. The new typewriter has, in addition to a single-shift standard keyboard such as is in use on all the makes of machines, a set of twenty-two keys, each of which will write a whole word with one stroke. The words selected for these keys are, of course, those of most frequent occurrence in the use of the English language, and are all words of one syllable, such as the, and, if, or, is, to, be, so, can, will, etc.

On the newly devised machine there is an escapement lock that makes it possible to write in either direction. In addition there are two special keys, conveniently located just behind the back row of the standard keys, and these keys rotate the platen in either direction for moving the paper up or down. These keys, in conjunction with the escape-

ment lock, make it possible to write up and down in a column. The carriage-shifting lever, instead of being on the right or left hand side of the carriage as in the ordinary typewriting machine, is on the right-hand side of the keyboard, easily accessible to the littlefinger, so that the carriage can be returned without moving the hand from the key-board. It is predicted that the new invention will have meet with an extensive demand.

THE "ALL-PURPOSE" MOTOR TRUCK

"What have you found to be the principal advantages of a truck for farm work?" was the question recently put to 15,000 farmers of the South Atlantic States by the United States Department of Agriculture. The answers to the question were divided as follows: Saving time, 92 per cent; saving horses, 3 per cent; better markets, 2 per cent; convenience, 2 per cent; reduction of expense, 1 per cent.

Following up the subject, it was found that hauling produce to market is only one item in the usefulness of the latest truck, designed especially to meet the needs of the farmer and the suburban dweller. When the truck is not busy on the road it will spray the orchard, pitch hay into the barn, collect the winter's wood, and saw it into cordwood lengths, and many other things—in a word, the truck engine furnishes the power for the many chores that in the past have made the farmer's life laborious.

By the exercise of ingenuity, of course, many a farmer has made a truck help him in his working in various ways, but in the new truck which is now being placed on the market, the ingenuity has been supplied by the manufacturer after an extensive study of the farmer's requirements. The result is seen in a number of special appliances that will perform the maximum number of chores with the minimum amount of effort.

The truck itself is of a type that has proved reliable and efficient in over twenty years of commercial test. On the chassis is set a body that can be adjusted either to a simple wagon with a flat steel platform, such as is needed in hauling fence posts of lumber, a common box body adapted to the majority of tasks, a high covered wagon like the old fashioned "prairie schooner" needed for carrying cattle, or a high-sided body suitable for hauling bundles of corn, hay or other bulky field products.

The feature that makes this pre-eminently the farmer's truck, however, is a group of attachments immediately behind the engine

train-service accidents in the first quarter of 1922, compared with the same period of 1921.

INCREASE OF WOMEN IN ALASKA.

Women in those parts of the world where they form a majority of the population will hear regretfully that the far north-western territory of Alaska has made a fair start, toward stabilization of population so far as the proportion of women to men is concerned.

Whether modern girls are becoming more adventurous or that final outpost of the American pioneer is becoming more tame, the Eugenics Research Association has recently published statistics to indicate that in Alaska there has been a continually approaching balance in the number of males to 100 females. In the total population this ratio has moved as follows: In 1900, 250.9, in 1910, 247.9, in 1920, 160.5.

Liability of Labour Unions.

The United States Supreme Court has handed down a decision regarding Labour Unions which promises to change profoundly their status in industrial disputes. The essential point of the opinion, which was delivered by Chief Justice Taft, is that Labour unions are suable and that the funds they collect for strike purposes are subject to execution in suits for torts committed by the unions in strikes.

Hitherto Labour leaders have always maintained that unions as such could not be sued, and that their strike funds could not be made liable for damages. The decision was nominally in favour of the United Mine Workers of America against the Coronado Coal Company of Arkansas. In the Federal District Court of Arkansas the coal company had secured a verdict for \$200,000 against the mine workers' organization, on the ground that the union had violated the Sherman Anti-Trust Law by unlawfully combining to restrain inter-State commerce. In accordance with the provisions of the law the Court had tripled the damages. The union appealed to the Supreme Court, the present decision being the result of the appeal.

UNIONS CAN BE SUED.

It was held by the Court that there had been no conspiracy to interfere with inter-State commerce, and that the acts complained of were not to be attributed to the United Mine Workers, but only to the local unions so-called "District No. 21." The local union its held responsible for lawlessness and outrages, which went to the point of dynamiting and flooding mines and of murder, and it ordered the re-trial of the case against District No. 21 in the District Court in Arkansas. But at the same time it laid down the ruling that there was nothing under the provisions of the Anti-Trust Act which exempted a

Labour union, as such, from being sued. The Court said, in part:—

Undoubtedly, at common law, an incorporated association of persons was not recognized as having any other character than a partnership in whatever was done, and it could only sue or be sued in the name of its members and their liability had to be enforced against each member. But the growth and necessities of these great Labour organizations have brought affirmative legal recognition of their existence and usefulness and provisions for their protection, which their members have found necessary. Their right to maintain strikes, when they do not violate laws or the rights of others, has been declared. The embezzlement of funds by their officers has been especially denounced as a crime. The so-called union label, which is a quasi-trade mark to indicate the origin of the manufactured product in union labour, has been protected against pirating and deceptive use by the statutes of most of the States, and in many States authority to sue to enjoin its use has been conferred on unions. They have been given separate and distinct representation and the right to appear to represent union interests in statutory arbitrations and before official Labour boards.....

It would be unfortunate if an organization with as great a power as this international union has in the raising of large funds and in directing the conduct of 400,000 members in carrying on, in a wide territory, industrial controversies and strikes, out of which so much unlawful injury to private rights is possible, could assemble its assets to be used therein free from liability of injuries by torts committed in course of such strikes. To remand persons injured to a suit against each of the 400,000 members to recover damages and to levy on his share of the strike fund would be to leave them remediless.

Industrial Bank for the United Provinces.*

The question of starting industrial banks in India, which closely engaged the attention of the Government of India from the time the subject was first discussed in the Report of the Indian Industrial Commission up to the time of the introduction of the Reforms, has, since the latter date, when industrial development was classed as a provincial subject, been engaging the serious attention of the Governor in Council acting with his Ministers with reference to the question of starting such a bank within these provinces.

The reasons for the consideration which has been bestowed by this Government upon the subject are not far to seek. At a time when industrial expansion is proceeding apace, owing to the availability within the provinces of large supplies of raw material and labour, many industrialists are confronted with a want of capital serious enough to hamper or to put a stop to their endeavours—a want which for lack of the necessary security they often find it hard to supply by recourse to commercial banks. The remedy for this situation which most readily suggests itself is the establishment, either by Government or by private agency or by both, of an industrial bank, to which industrialists could have resort and which would pay special attention to their needs.

At the suggestion of the Board of Industries, Government recently appointed a committee, under the chairmanship of Sir Thomas Smith to examine, and make recommendations upon the subject of establishing such a bank within these provinces. The proceedings of this committee were published for information in the Gazette of the 4th February, 1922. The committee reported that sufficient details were not before them to warrant the establishment of an industrial bank. They also pointed out certain difficulties which the establishment of such a bank would necessarily involve. The committee, however, were of opinion that the task of supplying small industrialists with capital upon easy terms in approved cases is a duty which should devolve upon Government; and with this object in view they recommended the constitution of a Board of Industrial Loan Commissioners, at whose disposal a lump sum of money should annually be placed by Government, with the consent

of the Legislative Council, for the purpose of making advances to industrialists whose circumstances justified such a course. In support of their proposal for the constitution of this Board, the committee drew attention to the fact that the Board would dispose of applications for assistance more expeditiously than is possible under existing methods, which require that applications shall be examined by several departments of Government as well as by the Legislative Council. They also remarked that the experience of the proposed Board would go far to show whether or not there is a genuine need for the opening of an industrial bank within these provinces. The committee suggested the composition which they considered would be suitable for the Board of Commissioners. Finally, they recommended that the Commissioners should be concerned only with pioneer industries and small industrialists, and that they should not be called upon to finance co-operative societies standing in need of credit.

Upon the receipt of this report the views of the Board of Industries, the Upper India and the United Provinces Chambers of Commerce, and of certain private persons were invited. As was only to be expected, the replies received criticized the scheme of the committee in certain respects. The most important of these criticisms was to the effect that industrial concerns should not be financed by Government loans, and that such concerns must have recourse to ordinary methods, viz., resort to commercial banks or the flotation of companies; if, however, Government assistance should in any case be absolutely necessary, it should take the form of a grant rather than a loan. With this opinion the Governor is unable to agree. State aid in the form of grants will, no doubt, be necessary in some cases, but a system of loans is obviously more economical than a system of grants; and he can see no objection to advancing the money of the State, in cases where adequate security for its return is offered, in order to assist promising enterprises which stand in need of capital. The other criticisms received related principally to the composition of the Board of Commissioners.

On the whole, however, the report of the committee was welcomed as a sound one, and there was a substantial measure of agreement that the Board of Commissioners

* Resolution of the U. P. Government dated 20th July, 1922.

suggested by the committee should be established, both as useful in itself and also as offering the best method of settling the question whether and when the establishment of a provincial industrial bank is necessary.

Taking these replies into consideration, the Governor has examined the whole position carefully. He shares the view of the committee that no adequate case has been made out for the establishment of an industrial bank at the present stage of industrial development in these provinces, and he accepts the picture which they have drawn of the difficulties which the inauguration of such a bank would involve. It must, in his opinion, be left for the future to decide whether or not the proposition is a feasible one.

Most valuable light upon this question will, however, be obtained if the Board of Commissioners, which the committee proposed, is brought into being. He agrees, too, that the constitution of the proposed Board will facilitate investigation into and disposal of applications from industrialists who need State loans for business purposes. As already stated, he can see no objection to the policy of making Government loans to industrialists who offer adequate security, and he thinks with the committee that the financing of such industrialists is a duty which devolves upon Government. He has decided, therefore, immediately to establish, generally on the lines proposed by the committee, a Board of Industrial Loan Commissioners, before which all applications from industrialists in need of loans will in the first instance come. Applications will be submitted to the Board by applicants direct: they will, however, after consideration by the Board, be transferred to Government, together with the Board's recommendations, for information and consideration as explained in the paragraph which follows.

In recommending the placing of a lump sum annually at the disposal of this Board, the committee evidently contemplated that the Board would be free to utilize the sum so allotted in making loans to industrialists on their own authority, without reference to Government; and it is undeniable that, if the necessity of reference to Government could be avoided, the best method of securing the expeditious disposal of industrialists' applications would be attained. The Governor in Council acting with his Ministers would gladly have given effect to the intentions of the committee in this matter, were it within

his power so to do; and he at one time proposed to introduce legislation giving the Board statutory existence and absolute powers of the kind recommended by the committee. This intention he has now with regret found it necessary to abandon, because he is advised that under the Devolution Rules it is impossible to dispense with reference to the Finance department in cases where the grant of Government loans is concerned; No. 37, clause (a) of those rules admits of no exceptions on this point. As legislation in contravention of the Devolution Rules would be *ultra vires*, it is not possible to give the new Board the absolute powers which the committee contemplated, and the deliberations of the Board will thus of necessity be subject to confirmation by Government. While the duties of the Board will thus be advisory only, their recommendations, it should be clearly understood, will carry the greatest weight with Government. It will be the function of the Board in every case in which it recommends the grant of a loan to examine the worth of the security offered as well as the merits of the enterprise, and in the knowledge that this function has been discharged Government will be able to dispose of such applications with greater despatch than has been possible in the past. The appointment of the Board will thus, notwithstanding the restriction of its functions within narrower limits than the committee contemplated, result in avoidance of many of the delays of the present system, which are inseparable from the exhaustive examination of all proposals by Government. The expert opinion, moreover, which the Board will be in a position to furnish will always exercise a great, and in most cases it may be anticipated, a decisive influence with Government.

With regard to the scope of the Board's activities, the committee recommended that the Board should be concerned only with "pioneer industries and small industrialists," and they also, as already stated, advised that co-operative societies of whatever class should be altogether precluded from turning to the Board when in need of credit. With these recommendations the Government are not wholly in agreement.

As to the first of them, in the opinion of Government, it is unnecessary to prescribe that certain classes of industrialists may and certain classes may not apply to the Board. They would prefer to give the Board a wide discretion in the matter. The Board should, therefore, regard itself at liberty as it thinks

fit to receive and to discuss applications for loans from all classes of individuals or corporations engaged in industrial development.

As to the second recommendation, Government consider that there is no reason why all non-agricultural co-operative societies should be precluded from applying to the Board. In the view of the Board of Industries, co-operative societies of cottage industrialists should not be debarred from the benefits of the new procedure; obviously the case of such societies is similar to that of private industrialists or industrial corporations, and the Government therefore agree with the opinion of the Board of Industries. Government accordingly desire that the Board of Commissioners, in the exercise of the wide discretion just alluded to, should be prepared to admit applications from non-agricultural co-operative societies of an industrial nature standing in need of credit and to judge them upon their merits in precisely the way that they will admit and judge applications from private industrialists or industrial corporations.

On the assumption that the Board of Commissioners would come into early existence, and in accordance with the recommendations of the committee, a sum of five lakhs was included in the current year's budget for loans for industrial purposes. As explained above the money annually voted for this purpose cannot be expended purely at the discretion of the new Board, but the Board should regard it as representing the extent to which it can recommend that applications for assistance should be granted. A portion of the vote for the current year has, however, already been utilized in grants for the manufacture of ink and plate glass. It is hoped to provide similar sums or even larger ones on this account in budgets of future years.

It remains to describe the composition which the Government have decided to give the New Board. The committee recommended that the membership of the Board should be as follows :—

- (a) The Director of Industries.
- (b) A technical expert.
- (c) A commercial man.
- (d) The Registrar of Co-operative Societies.
- (e) A representative of the Imperial Bank of India.
- (f) A representative of Joint Stock Banking.
- (g) The Financial Secretary to Government.
- (h) Power to co-opt three other members.

The composition suggested above has been

criticized, in the opinions which have been expressed to Government on the Committee's report, on the ground that places on the new body are not reserved for the Board of Industries and for the two Chambers of Commerce, and that the power to co-opt three members is unnecessary and undesirable. Government agree with both these criticisms. With reference to the proposed inclusion of a "technical expert" Government understand that what the committee desired was the appointment to the Board of mechanical engineer, competent to form opinions on the value of the machinery which will almost invariably come under discussion in applications for assistance which will reach the Board. Government appreciate this desire and propose that the first technical expert to be appointed to the Board should be the Mechanical Engineer to Government.

In other respects the membership which the committee have suggested for the Board is accepted by Government, save that they have decided that the Financial Secretary to Government shall be ex-officio Chairman, and the Director of Industries ex-officio Secretary, of the Board; and also that the representative of the Imperial Bank of India, whose presence upon the Board the Bank has kindly permitted, shall always be drawn from one of the United Provinces branches of the Bank.

The Board will therefore be composed as follows :—

- (1) The Financial Secretary to Government ex-officio Chairman.
- (2) The Registrar of Co-operative Societies.
- (3) The Mechanical Engineer to Government.
- (4) A representative of one of the United Provinces Branches of the Imperial Bank of India, to be nominated by Government (with the consent of the Bank).
- (5) A representative of Joint Stock Banking, to be nominated by Government.
- (6) A member of the Board of Industries, to be selected by the Board.
- (7) A member of the Upper India Chamber of Commerce, to be elected by the Chamber.
- (8) A member of the United Provinces Chamber of Commerce, to be elected by the Chamber.
- (9) The Director of Industries, ex-officio Secretary.

All action necessary for the filling up of the places thus allotted will at once be taken.

The term of office of the members of the Board will be three years, and the Board will meet at such places and times as the Chairman may decide.

The Manufacture of Glue.

Among the new developments that owe their inception to the initiative of the Madras Department of Industries, the manufacture of glue at tropical temperatures is by no means the least important. One of the many commercial secrets revealed by the war was the fact that a very large quantity of tannery waste from the Madras Presidency was exported to Germany presumably for the manufacture of glue, and the closing of the continental markets to fleshings caused a great accumulation of this very valuable material.

At the instance of Mr. Tressler, the then Director of Industries, an attempt was made in 1916 to manufacture glue locally from fleshings which, though not completely successful, was such as to encourage further experiments in the direction of devising some method of making glue solutions set to a jelly at the temperatures generally prevailing in Madras.

Early in 1917 when the Indian Munitions Board were seeking for supplies of glue in India for use in aeroplane construction, Mr. K. C. Srinivasa Ayyangar who was employed at the time as lecturer at the Leather Trades Institute was asked by Mr. Innes, the then Director of Industries, to complete the investigations previously initiated. After further research and some practical experiments at Perambur, Mr. Srinivasa Ayyangar evolved a method of treating the fleshings which yielded a glue which set under the most adverse climatic conditions and the results of his work were published in the form of a departmental bulletin. The process of manufacture is comparatively simple but if great care is not exercised at all stages, the results are disappointing. The fleshings obtained from local tanneries are first mechanically and then chemically cleaned. They are then digested with distilled water and the resulting liquor is first clarified and afterwards concentrated. Concentration is effected with the aid of pre-heaters, film evaporators and vacuum pans so linked up to one another as to permit of continuity and rapidity of operation. The concentrated liquor is then allowed to set in shallow plates, cut into blocks and dried. The success of the process depends to a large extent upon reducing as low as possible the time during which the raw material and resulting liquor are subjected to high temperatures.

USES OF GLUE.

Glue of course does not come within the category of indispensable daily needs but is put to an immense variety of uses and the list is constantly extending. To the carpenter and the book-binder it is a practical necessity while it enters largely into the match, emery sheet, sandpaper and printing paper industries. Mixed with white lead, chalk and saw dust it yields a composition suitable for use in artistic work while together with glycerine or treacle it makes the valuable hectographs or printing rollers. Recently, too, some experiments have been made in the direction of applying liquid glue in the laying of tarred Macadam roads and the results obtained on a small scale were sufficiently promising to justify further tests.

CONCLUSIONS.

The manufacture of glue is a chemical trade. From what has been said as to the wide uses of glue a general prosperity in trade will conduce very much towards the betterment of this industry. The severe trade depression since 1920 has made the economic production of glue much more difficult than before. There remains two other factors going a long way towards the reduction of manufacturing costs. The hide glue factories should gravitate towards the leather centres so as to ensure a steady supply of raw material at a cheap rate and the glue factory should have as adjuncts to it small industries manufacturing roller composition, emery sheet and a sandpaper. The market for glue as disclosed by the sea-borne trade returns is considerably larger than was generally supposed. In the year 1920-21, 1046 cwts. of glue were imported by Madras alone but the market is a scattered one. In the statement appended is shown the importation of glue into British India during the years 1913-14 to 1917-18 and 1920-21.

The factory in Madras which is in the experimental stage at present has been under departmental management since it was re-opened in the beginning of the current year. The factory is capable of turning out 80 tons or more of glue per month but for the present deals only with about 15 tons of raw materials and turns out 3-4 tons of glue per month. The glue produced is of excellent quality suited to high class furniture work, book-binding and roller composition. It is difficult to believe that

quality for any cheaper glue than this can be obtained and nothing approaching this standard is produced elsewhere in India whilst English and Italian glues are too dear to permit of any competition. For samples and further particulars, enquiries may be addressed to the Superintendent, Government Glue Factory, Washermanpet, Madras.

APPENDIX (a)

Statement showing the importation of glue into British India during the years 1913-14 to 1917-18.

	1913-14		1914-15	
	cwt.	Rs.	cwt.	Rs.
Into Bengal	..	52,721	..	56,643
„ Bombay	..	44,346	..	30,386
„ Burma
„ Madras	757	20,920	267	7,564
„ Sindh	..	1,666	46	1,673
Total	..	1,19,653	..	96,266

	1915-16		1916-17		1917-18	
	cwt.	Rs.	cwt.	Rs.	cwt.	Rs.
Into Bengal	..	69,044	..	71,330	..	1,02,540
„ Bombay	..	75,461	..	45,681	..	68,050
„ Burma	..	34,734	..	44,119	..	18,441
„ Madras	705	26,787	175½	7,230	96	7,480
„ Sindh	56	2,299	21	875	24	1,780
Total	..	2,08,325	..	1,69,243	..	1,98,291

APPENDIX (b)

The following figures show the imports of glue into British India during 1920-21 :—

Madras	..	1,046	Cwts.
Calcutta	..	1,835	..
Bombay	..	2,430	..
Burma	..	1,238	..
Sindh	..	119	..
Total	..	6,668	..

Montreal Exhibitions.

With a view to furthering the interests of Indian trade with Canada, H. M. Trade Commissioner, Montreal, invited merchants and manufacturers in India to exhibit their goods in the sample rooms, attached to his department. Representative specimens of linseed oil, dressed leather, coir mats, matting, yarn and husks of cocoanut, palmyra fibre and stalks, lizard and crocodile skins, etc., drugs and chemicals, chikan work, jute shoes, coffee, tea, jute in all stages, carpets and rugs, brushware and ropes were forwarded in August, 1921, and were delivered there in January last. A consignment of jute products and shellac was shipped later. The various samples were placed on view in the office of H. M. Trade Commissioner and were inspected by firms interested. Reference to the exhibits was also made in the Canadian Press.

The following opinions on the exhibits were received :—

Linseed Oil.—The prices for the four qualities represented are considered too high. Current quotations per Imperial gallon in barrel lots are as follows: Raw—\$1.05; Boiled—\$1.07.

Dressed Leather.—Little interest has been displayed in these samples, although they have been inspected by several visitors connected with the leather trade. As the samples were unpriced, it was difficult to get local firms to express an opinion; or to take the trouble to prosecute enquiries by correspondence.

Palmyra Fibre and Stalks.—Present supplies used in Canadian brush factories are purchased

in the United States. If Indian firms preparing this fibre will cut to specification, say from 3½ in. upto 8 in., and have fibre properly graded, Canadian brush manufacturers will be interested. There is stated to be no machinery in Canada for cutting the fibre to specified lengths.

Chikan Work (Embroidery).—The ladies' underwear garments are described as old-fashioned in cut, and quite unsuited to the taste of the modern Canadian woman. The foundation for the embroidery is also criticised, a washable satin or light silk being indicated.

Jute Shoes, etc.—There is no demand in Canada for footwear of this description, but further enquiries are being made as to the possibility of a market in the Southern States of America.

Coffee.—There appears to be no prospect of developing a market for tinned ground coffee.

Brushware.—Speaking generally, prices are regarded as too high, brushes of a similar kind imported from the United States, without the advantage of a preferential tariff, being lower in price. The toilet brushes in demand here should have ivory, French ivory, grained ivory or ebony backs.

A Canadian National Exhibition is held annually. Firms desiring in future to exhibit examples of Indian produce may communicate with Major H. A. Chisholm, M.C., Canadian Government Trade Commissioner, at 4, Mission Row, Calcutta, who can supply full details.

The Sugar Trade in India during 1921.

By Kasanji D. Naik, M. A.,
Offg. Secretary, Sugar Bureau, Pusa.

The year 1921 marks a large recovery in the import trade of sugar in India. Prices in 1920 had reached unheard of levels with the result that imports were curtailed; only 236,095 tons net of foreign refined and unrefined sugar being imported as compared with 748,544 tons in the calendar year 1913. Stocks in India were thus very low in the beginning of the year 1921 and the work of replenishing was facilitated by the continuous fall in prices that took place during the year as the result of an increase of a million and a half long tons in the world's production of cane and beet sugar as compared with the previous year, the heavy carry over in the United States of America and the general under-consumption of sugar in Europe.

The year also saw an increase in the Indian import duty on sugar from 10 to 15 per cent *ad valorem* but this had practically no effect in restricting imports as for the first time after April 1919 sugar became cheap enough for consumption by men of ordinary means.

INDIA'S PRODUCTION, IMPORTS AND EXPORTS.

(1) *Gur*.—India's production of cane and palm *gur* or jaggery during the year amounted to 2,448,000 tons against 2,951,000 tons in the previous year. She also imported from countries situated on her borders 526.2 tons of unrefined sugar, *i. e.*, *gur*, as compared with 680.5 tons in the year 1920. A very small portion of the total output of *gur* or jaggery is usually exported by sea to the United Kingdom, Ceylon and neighbouring countries. During the year under review the exports by sea showed a considerable falling off, totalling only 5,721 tons valued at Rs. 17,70,159 as against 22,875 tons valued at Rs. 76,36,060 in the previous year. The United Kingdom took only 1,476 tons valued at Rs. 4,43,815 as against 16,551 tons of the value of Rs. 50,37,160 in the previous year. Ceylon also took less, only 3,045 tons valued at Rs. 8,86,740 as against 5,034 tons of the value of Rs. 19,22,710 in 1920. The exports of *gur* by land showed an increase during the year, aggregating 7,423.9 tons valued at Rs. 22,57,808 as compared with 6,398.2 tons valued at Rs. 18,61,453 in 1920. No less than 285,000 tons of *gur* and *rab* were consumed in refineries for making refined sugar. We thus find that a total of 2,150,382 tons was left in the country for consumption

as compared with 2,572,400 tons in the previous year.

(2) *Refined Sugar*.—During the year under review India manufactured 73,113 tons of refined sugar in her 29 modern factories and refineries, an increase of nearly 6,000 tons over the output in the year 1920. Her production of refined sugar by the indigenous process of sugar-making may be estimated at 50,000 tons making a total of 123,113 tons refined sugar manufactured in the country. A portion of this sugar is exported by sea to Asiatic Turkey including Mesopotamia, Persia and Ceylon. The exports fell during the year, the total quantity exported being only 1,402 tons valued at Rs. 10,73,231 as against 4,296 tons valued at Rs. 37,08,300 in the year 1920.

India's own production of refined sugar is insufficient for her requirements. She has therefore to import from abroad, the main sources of supply being Java, Mauritius, and Continental Europe. As compared with the previous year, the imports from Java and Mauritius were heavy. As the prices of Java white and brown sugars were falling, and as local stocks were depleted, India took the opportunity of buying heavily. As regards Mauritius, the control of the Royal Commission on supplies of sugar in that island came to an end in February 1921, and the crop of 1920-21 was a bumper one. These favourable circumstances account for heavy importations of Mauritius sugar. Beet sugar, the supply of which was temporarily cut off during the war, was imported during the year under review to the extent of 7,140 tons from Belgium and the Netherlands.

The table on the following page shows the imports of foreign sugar during the pre-war year 1913 and the last three years.

A negligible quantity of sugar 16 D. S. and above is imported by land from Afghanistan, Western China and the countries situated on India's borders. The imports were this year 11.45 tons valued at Rs. 8,716 as against 10.55 tons valued at Rs. 5,980 in 1920.

India's imports of refined sugar both by sea and land thus amounted to 583,997 tons valued at Rs. 24,40,27,424 while raw sugar (not *gur*) was imported to the extent of 506 tons valued at Rs. 1,13,930. It should be noted that all this sugar is not consumed within

Imports by sea of sugar 16 D. S. and above during the calendar years 1913 and 1919—1921.

Sugar 16 D. S. and above	1913		1919		1920		1921	
Countries from which imported	Value in Rs.	Quantity in tons	Value in Rs.	Quantity in tons	Value in Rs.	Quantity in tons	Value in Rs.	Quantity in tons
United Kingdom	2,71,035	930	36,190	97	9,830	7	89,093	85
Germany ..	8,38,095	4,523	..	..	..	..	..	..
Belgium ..	78,120	407	..	..	..	..	30,94,531	5,312
Netherlands ..	..	..	..	..	..	..	12,51,848	1,828
France ..	10,875	35	..	..	..	..	..	..
Austria-Hungary	1,45,61,521	73,595	..	..	..	..	..	..
Straits Settlements (including Labaun)	6,15,090	3,008	96,97,610	19,874	64,09,630	8,850	34,69,910	6,747
Java) ..	9,87,62,145	551,864	14,47,85,380	340,417	18,69,64,600	271,949	21,85,64,078	533,943
China (including Hongkong) ..	4,66,380	1,979	60,09,630	10,815	60,33,710	7,251	29,84,419	4,746
Japan ..	(a)	(a)	3,98,480	587	6,17,670	957	4,12,377	651
Egypt ..	(a)	(a)	31,41,240	2,903	44,77,280	4,911	3,34,506	401
Ceylon ..	(a)	(a)	2,420	4	1,15,830	176	7,67,302	1,471
Mauritius and Dependencies	2,10,40,680	113,091	1,85,11,650	44,523	1,17,63,530	16,987	99,92,663	25,161
Other countries	1,09,410	494	88,160	161	16,97,570	1,910	30,57,981	3,641
Total ..	13,67,53,350	749,926	18,26,70,760	419,381	21,80,89,650	312,998	24,40,18,708	583,986

(a) Included under "other countries."

the country. A part is re-exported by sea and by land. The re-exports by sea of foreign refined sugar which are principally to Arabia, Persia, Kenya Colony, Asiatic Turkey and Aden and Dependencies showed a decline during the year, and only 28,418 tons valued at Rs. 1,69,32565 being re-exported as against 77,579 tons valued at Rs. 6,47,44,240 in the previous year. This decline is, however, natural, the year 1920 being exceptional in the history of sugar, the keenness of demand and high prices prevailing in Europe and America causing India to re-export a large quantity to the United Kingdom, the United States of America, Belgium and the Netherlands—countries which do not usually draw upon India for their supplies. As regards exports by land, these showed an increase naturally because the fall in prices encouraged consumption. These amounted to 9,649 tons valued at Rs. 86,12,790 as against 5,845 tons valued at Rs. 51,29,159 in the year 1920.

The re-exports by sea of foreign unrefined sugar are insignificant. Only 20 tons out of the 506 tons imported were re-exported during the year.

Summarizing the position, we find that exclusive of the stocks carried over from the previous year there were 668,127 tons of white and brown sugar available in India for consumption during the year as shown below:—

	Tons
India's production of refined sugar ..	123,113
India's import by sea of white and brown sugar ..	584,492
India's imports by land of refined sugar ..	11

Grand total 707,616

Deduct—

Re-exports by sea of foreign refined and unrefined sugar ..	28,438
Exports by sea of refined sugar produced in India ..	1,402
Exports by land of refined sugar ..	9,649

Total .. 39,489

We are unable to say how much of this sugar was actually consumed during the year and what quantity was stored as invisible stocks. But a comparison of the visible stocks at Bombay, Karachi and Calcutta in January, 1921, and the beginning of 1922 shows that there was a considerable carry over at the end of the year.

	1921	1922
	Stocks in bags	Stocks in bags
Calcutta (Port	138,687	376,052
Warehouses only)	(4th Jan. 1921)	(3rd Jan. 1922)
Bombay Total	184,000	241,000
Stocks	(1st Jan. 1921)	(1st Jan. 1922)
Karachi Total	137,000	227,000
Stocks	(5th Jan. 1921)	(28th Dec. 21)
Total	459,687	844,052

(3) *Molasses*.—During the calendar year 1921 India imported by sea 78,170 tons of molasses valued at Rs. 62,33,777 as against 91,918 tons valued at Rs. 1,01,97,030 in 1920. In the five years preceding the war the net imports of this commodity averaged 93,354 tons valued at Rs. 41.53 lakhs. Over 45,000 tons of molasses are produced in India by modern factories and refineries. Besides this, nearly 50,000 tons of molasses are produced every year by small establishments refining *gur* according to the indigenous process. All this is consumed within the country as there are no exports or re-exports of this commodity. It is principally used for distilling for rum and for curing tobacco. It has not yet come into any appreciable use as a cattle food, nor is this by-product of the sugar industry being utilized for the manufacture of motor fuel, although it is reported that some firms are interesting themselves in this matter.

(4) *Confectionery*.—India imports confectionery including Jams and Jellies principally from the United Kingdom and Australia. During the year under review there was a decrease in the imports under this head, only 1,137.5 tons worth Rs. 27,55,967 having been imported against 2,743 tons valued at Rs. 52,23,990 in the year 1920. The whole of the quantity imported is not consumed within the country. A portion of this is re-exported the figures this year being 60 tons (confectionery excluding jams and jellies) against 45 tons last year. India also exports by sea to foreign countries confectionery locally manufactured the figures for the year under review being 54 tons valued at Rs. 69,977 against 34 tons of the value of Rs. 47,810 in the year 1920.

(5) *Saccharin*.—India imported during the year 20 tons of saccharin valued at Rs. 4,86,804 against 29 tons worth Rs. 8,14,160 in 1920. It may be mentioned that during the two pre-war years 1912 and 1913 very nearly the same quantity of this synthetic product was imported in this country.

FLUCTUATIONS IN PRICES OF SUGAR AND GUR.

We now turn to the fluctuations in the prices of sugar and *gur*. As sugar is an article of food required by the whole world, its price is regulated by the effective world demand and the total world supplies available. These are the fundamental factors in determining the price in the world's markets but in addition to these, temporary local causes, such as depleted stocks, heavy off-take, etc., play their part in bringing about fluctuations. The prospect of replenishing stocks within a given

time at higher or lower values, the estimated increase or decrease in the production of commodities which can be used as substitutes, the favourable or adverse position of the country's currency for purposes of international exchange, the prospect of an increase or decrease in the import duty, all these have their influence on the market. Yet another factor influencing the price of sugar in this country in the beginning of the year is the tariff valuation. This is revised at the beginning of each calendar year and is based on the average net market price of sugar ruling during the previous twelve months ending September. When the price of sugar is high (as for example in the year 1920) the average tariff valuation for the next year is higher (even though the actual price may be different) and the *ad valorem* import duty is charged at the sanctioned per cent of this value. This tends to raise the price in the beginning of the calendar year. The influence exerted by this factor will be seen from the variations in the tariff valuation for Java white 23 D. S. and above for the three years 1920, 1921 and 1922 given below:—

Year	Tariff valuation per cwt.			Import duty <i>ad valorem</i>	
	Rs.	A.	P.	Per cent.	
1920	18	8	0	10	
1921	32	4	0	15	from March onwards.
1922	26	4	0	25	from March onwards.

As the average valuation for the year 1923 is not likely to exceed Rs. 16 per cwt., there will be a reduction in the amount of duty charged per cwt. of sugar by about Rs. 2.9 even when the rate of import duty remains the same and this in itself will tend to lower the price when the revised valuation comes into force, other factors remaining the same.

The demand for foreign sugar is also affected by the increased or decreased production of *gur* in a particular year as cheap *gur* replaces sugar in many Indian households for a variety of preparations. Further with cheap *gur* as a raw material for refining there is every encouragement to the existing refineries in India to work to their utmost capacity and to increase their output though it must be noted that they are yet too few to produce an appreciable effect.

We will now briefly review the course of prices in the principal markets during the year and to do this effectively it is necessary to take a brief retrospect of conditions in the previous year. The whole world was affected by the

fever of speculation which raged in the first half of 1920 and as a result the average wholesale price of Java white rose to Rs. 40 per maund in the Calcutta market in the month of May. A regular decline followed from July onwards till the close of the year when the price of Rs. 17-12 per maund was reached. In the Bombay, Karachi and Madras markets this decline set in from September. The beginning of the year 1921 witnessed a rise in the price of sugar. Among the causes of the rise may be mentioned the following:— The stocks were low, the revised tariff valuation added nearly a rupee and a half per cwt., the production of *gur* in India was estimated to be half a million tons less than in the previous year and the new Java crop was not expected to be available till April 1921.

The average wholesale prices of Java white and Mauritius crystals in the Calcutta market were Rs. 22-6 and Rs. 22 per maund in January. They advanced to Rs. 25-12 and Rs. 25-8 respectively in February; to Rs. 27-8 and Rs. 26 respectively in March. Thenceforward there was a regular decline except for a small rise in the month of July. The year closed with the prices of these sugars at Rs. 12-8 and Rs. 12-2 respectively.

In the Bombay market the average wholesale price both of Java white and Mauritius No. 1 was Rs. 36 per cwt. in January 1921. Mauritius No. 1 advanced to Rs. 38-10 in February and to Rs. 41-2 in March while Java white advanced to Rs. 38-12 in February and to Rs. 40-8 in March, and thenceforward there was a regular fall in the prices of both these grades of sugar till the lowest level was reached in December when the prices of Rs. 19-6 per cwt. (= Rs. 14-3 per maund) for Mauritius and Rs. 19-4 for Java white per cwt. (= Rs. 14-1-6 per maund) were registered.

The average wholesale price of Java white in the Karachi market was Rs. 33-8 per cwt. in January 1921. It rose to Rs. 40-4 in February and then began to decline till the lowest figure of Rs. 17-8 per cwt. (= Rs. 12-13 per maund) was reached in December.

The average wholesale price of Java white in the Madras Market was Rs. 34-2-8 per cwt. in January; it rose to Rs. 36-2-8 in February; to Rs. 40 in March and thenceforward there was a regular decline till October when Rs. 18-14-0 per cwt. (= Rs. 13-13-1 per maund) was reached. There was a small recovery in November and a slight further appreciation in value in December.

In the Rangoon market in the average price

of soft white cane sugar was Rs. 42 per cwt. in January and remained practically steady till April. It then went on declining till October when Rs. 17-9 per cwt. (= Rs. 12-13-9 per maund) was reached. Some improvement took place in November but this was not fully maintained in December.

Of the interior markets, Cawnpore is one of the most important. The average wholesale price of refined sugar in this market in January was Rs. 24 per maund; it advanced to Rs. 26 in the first half of March, to Rs. 28-86 in the second half of that month, to Rs. 29 in May and then went on falling till November when Rs. 16 was reached. There was, however, a slight recovery in December.

We now turn to the fluctuations in the price of *gur*. In the Calcutta market the highest price of *gur* during the year 1919 was Rs. 10 per maund but with the general rise in the price of sugar it advanced to Rs. 13-8 in May and June 1920 even though there was no decrease in production. The price in November and December 1920 was Rs. 13. As this was an abnormal price it was bound to come down to some extent during the year in sympathy with the fall in the price of refined sugar, there being no appreciable reduction in the output of *gur* in Bengal. We thus find that its price declined to Rs. 9-8 in March and remained steady at the figure for the next three months. In July there was a slight rise but the price again declined to Rs. 8-12 in August, at which figure it remained steady for the remaining months of the year.

Bombay produces high class eating *gur* which generally commands a higher price. With the general rise in the price of sugar in 1920 *gur* reached a record price of Rs. 23-2 per maund in the Bombay markets. With the downward trend of the sugar market and the prospect of a good local crop the prices continued to decline till July 1921 when the price of Rs. 13-9-8 per maund was reached. Thereafter with the prospective shortage of the new crop the prices firmed up and rose to Rs. 15-10-4 in September and remained steady till the end of the year.

As regards other markets, no reliable information regarding the prices of various grades of *gur*, e. g., high class eating *gur*, ordinary eating *gur* and refining *gur* is available and no useful purpose will be served by a further consideration of this subject.

CONCLUSION.

It is clear from this review that India's net imports by sea of foreign refined and unrefined

sugar during the year amounted to no less than 556,054 tons valued at Rs. 22,71,92,629. Although the imports were less than in the pre-war year 1913 when they totalled 748,544 tons the money value is greater than that year by Rs. 9,12,85,670. The fact that India is well able to spend over 22 crores of rupees on her sugar requirements should act as a powerful stimulus to capitalists to explore all

suitable localities for setting up well-equipped factories on up-to-date scientific lines. The enhancement of the import duty on sugar from 15 to 25 per cent and the increased railway freights should prove an additional incentive to the development of the Indian sugar industry on sound lines and it is hoped that the necessary enterprise and capital will be forthcoming in the near future.

Railway Operation.

There is a natural expectation that the grouping of the railways and the consequent operation of what have hitherto been separate and, in some cases, rival systems, under one management, will enable material economies in working costs to be effected. Previous contributions to the *Trade Supplement* have indicated the directions in which the search for savings will be made, and this was one of the points made by Sir John Aspinall in the address delivered by him before the Institution of Civil Engineers this week.

An aspect of the subject which received detailed attention was the reduction of unremunerative wagon mileage. The statistics which are now being prepared by British railways bring out quite clearly the waste involved in wagon-shunting. The figures available indicate that in a single year out of 288,000,000 freight engine miles no fewer than 50 per cent represented shunting operations and, in addition to the direct waste, was responsible for about 20 per cent of the total locomotive expenditure. With the object of reducing this wastage the elimination of the privately owned wagon is strongly advocated. It is estimated that if the whole of the wagon stock were railway owned from 20 to 25 per cent of the present shunting costs would be saved.

Support is given by Sir John Aspinall to the arguments put forward in a recent issue of the *Trade Supplement* on the subject of the use of high capacity wagons for the shipment of coal. He asserts that a very large saving in railway operating expenses could be brought about quickly by reforms in the carriage and manipulation of export bunker and coastwise coal if wagons of higher capacity were employed. He agrees with the view that this reform can only be achieved by the co-operation of coal owners, the railway companies, dock owners, and ship-owners. The wagon owner, whether railway company

or trader, must supply larger wagons, and coal-tipping appliances at the ports must be designed to deal with these larger wagons.

The result would be that the railway company would save money in capital cost of wagons, would have far less shunting work, would be able to deal with the traffic on smaller sidings, would haul less dead-weight in proportion to paying weight, and would get its wagons back sooner. The dock-owning company would effect economies by having the coaling berths occupied by each ship for a much shorter time, so that a larger number of vessels could use the dock in a given time. The shipowner, as the result of more rapid loading, would get a quicker turn round with his ships, which would be able to make a larger number of trips per year than under present conditions. The colliery owner would save money in shunting work and in quicker loading. It is true that the alteration of coal-tipping appliances and the provision of larger wagons would cost a large sum of money, but it is a sound argument that the interest on this sum would only be a small percentage of the reduction in costs of operation which would be effected. This is only one example, although sufficiently important, of economies in the cost of operating goods traffic which could be realized.

Writers in the press of Jamaica are urging that the Colony should establish a Trade Commissioner in London. The Legislature will probably be requested to take up the question. It is being urged that such an appointment should be confined to Jamaica alone owing to the lack of shipping facilities between the eastern and western Colonies in the Caribbean; and remarks contained in Mr. Wood's report on the impracticability of West Indian Federation at this juncture are being used to support the contention that Jamaica must consider such an appointment from her own point of view.



Views and Comments.

BY "ECONOMICUS".



It seems as if the Government of India is going to whittle down the recommendations of the Ackworth Committee regarding our Railways in such a way as to please the European mercantile interests. The first move on the part of the Government, so far as we remember, was to publish an article through the Central Bureau of Information explaining that the present grievances were such that they did not necessarily demand State management to remove them. Now the Government elicits, again, the opinion of the premier commercial and industrial bodies in India. One would think that this is unnecessary since the Ackworth Committee has already recorded at length the views of those bodies. The ways of our Government are inscrutable.

* * *

Presiding over the annual general meeting of the Alliance Bank of Simla, Sir David Yule made recently a very curious proposal. Since these are behind the 206 crores of rupees raised by loans since 1917, few productive works to meet the interest charges of about 12 crores and since the equation of the Budget grows more and more serious each year both for Government and taxpayer, Sir David asks the Government to cancel the debts by issuing currency notes and thereby save the interest charges. This he proposes to do by offering short term treasury bills or selling on tender system and redeem these, not in special, but in currency notes and thus effect a transfer from interest-bearing non-interest-bearing debt. We expected a greater grasp of monetary principles from such an eminent financier as Sir David. Apart from the temptation to borrow and the consequent demoralization which his proposal is likely to engender, the practical objection is that the issue of currency notes to the extent of the debt or the supposed needs of the State, will send up the prices (according to the quantity theory) and the evil consequences of inflation or watered currency will be the inevitable result. Sir David does not recognize that the necessity for the payment of interest acts as a brake on the financial policy of an "irresponsible" State and once that is gone, the Government is right on the road to bankruptcy and crash.

In his recently published book on the Economics of Tenancy Law and Estate Management (with special reference to the United Provinces) Mr. H. Stanley Jerous says :—"The agricultural organization most appropriate to the stage of social development in India is the landlord and tenant system with fairly large estates, and a certain number of large farms worked by gentlemen farmers." Prof. Jerous admits that "only a few landlords realize the position they should occupy in the agricultural economy." But he holds that "it is the business of Government to train them for their high task, and in the case of those who refuse to respond, to take over their estates for direct management." He further says that "in all cases the Government must insist on landowners only employing as their agents, persons possessing a diploma of estate management to be obtained by two years' training at an agricultural College." Prof. Jerous seems to entertain a very high opinion of the sense of duty, honesty, efficiency and capacity of Government servants and diploma holders which we do not share. We hold that in most parts of India and for most of the crops a comparatively small holding, not exceeding 30 and not less than 5 to 10 acres will be about the best. The small farm ensures an intensive application of labour and capital, but above all a better distribution of farm products so essential for the prosperity and contentment of a predominantly agricultural population. Capitalist farming on a large scale will surely result in the emigration of the country population, a prospect by no means cheering.

The Madras Government have accepted the resolution of the Municipal Council, Erode, that elementary education shall be compulsory within the whole of the local area under its jurisdiction for all children of school age excepting Muhammadan girls. The provisions of sections 47 to 52 of the Madras Elementary Education Act shall come into force within that area from the 1st November 1922. This is the first instance where compulsory education for girls is proposed.

Economic Notes.

INDUSTRIAL, AGRICULTURAL, EDUCATIONAL AND GENERAL.

In the *Bulletin of the Imperial Institute* (No. 1, 1922) is an interesting summary report of the work of the Imperial Institute for India. It will repay perusal on the part of industrialists. Copies may be ordered through our Book Department. Price 3s. 6d. net, postage extra.

* * *

As a result of the abnormal conditions brought about by the Great European War, the Madras Government permitted for a period of three years from the 1st July 1919 the cultivation of the waste lands classified as Railway poramboke in the Madras Presidency with a view to stimulate the production of food stuffs. The period of three years expired on 1st July 1922. The Madras Government have now extended the concession of cultivating the Railway waste lands for another two years from 1st July 1922 duly in respect of such lands as have *already* been brought under cultivation.

* * *

It is needless to say that India has as yet made very little attempt either to extend the area under coconuts or to develop the various industries based on coconut products. There is only one factory in Pondicherry which manufactures "cocotine" or vegetable butter on a small scale. But this enterprise, praise-worthy though certainly it is, is nothing compared with the successful efforts of the Germans which have materialized in the extensive factories in Central Europe turning out huge quantities of edible products, cattle food and manure from copra. Fibres from the various parts of the palm and the shells have not, likewise, received that amount of attention which they deserve. Desiccated coconuts constitute a profitable line; in comparison with Ceylon there is very little trade in this product in India. Except in certain localities of South India coconuts have been very much neglected in the past in this country. It is time now that men of all coast districts of India and Burma should wake up to the vast possibilities of the palm and try to utilize its products by the most up-to-date processes adopted in the go-ahead, coconut-growing countries of the world.

The discovery which has been made in motion-picture scenery is a process, says the *Scientific American*, by which it is possible to enlarge ordinary photographic plates to 15 x 20 foot reproductions. These huge enlargements are designed to replace painted scenery in the movies, and enable the making of 15 x 20 foot reproductions that are sharp and clear in every respect. The mode of operation consists in going out, and photographing a house, bit of scenery, or other desired location on the ordinary way, one of the big enlargements is then made and mounted on heavy frame-work. It is then ready for use. A picture using several pieces of photographic scenery was recently completed at a studio in Los Angeles and was a success in every way. More elaborate scenes are now being constructed and it appears as though the possibilities of the radical departure in movie sets are unlimited.

* * *

With a view to devise ways and means of extending the iron ploughs and other mechanical implements for agriculturists in the Presidency in order to increase production and save human and animal labour the Bombay Government had appointed a Committee, under the Chairmanship of Mr. E. D. Bell, Director of Industries. In their report the Committee pay special attention to the question of the improvement of ploughs and urge for the efficacy of threshing machines for jowar and paddy, implements for effectively puddling of rice fields, planting rice, and digging cotton stubbles. The Committee recommend that the designing of new and improved implements should be an important function of the agricultural engineer working in conjunction with the Deputy Director of Agriculture. Further the Committee suggest that intensive propaganda for the introduction and extension of the use of new improved implements should be made by the Agricultural Department in co-operation with various local popular organizations including co-operative societies. The Government have accepted the Committee's recommendations and steps have been taken to give effect to them.

The strangling effect of high ocean freight rates on British trade is clearly shown by an article which appears in *The Times Trade and Engineering Supplement*, published in mail week. Remarkable instances of the difference in freight rate between British and Continental ports and South America, which have been collected by the Buenos Aires Chamber of Commerce, are given.

* * *

The non-official members of the U.P. Settlement Committee supported by four landlords made a proposal preferring permanent settlement and if that could not be granted the term of settlement to be extended to fifty years. Mr. Burns, Senior Member of the Board of Revenue, on the other hand, proposed that the term of settlement shall be thirty years provided the Local Government may with sanction of the Government of India extend it on the grounds of pressure of population in the land, extent to which the cultivable area is cultivated, and the fulness of rentals. The proposal of Mr. Burns was carried supported by four Officials and a Liberal.

* * *

The *Financial News*, reviewing Professor Stanley Jevons' book on the future of exchange and Indian currency, discusses his policy for the stabilization of the exchange rate of the rupee at 16 pence. It assumes that Mr. Jevons' proposal is that sterling should be treated as invariable for Indo-Britannic exchange purposes. In other words, the aim should be to control and steady the rupee rate in terms of sterling and paper, and thinks there is something to be said for this policy on the principle that half a loaf is better than no bread, notwithstanding the fact, that it will have little or no effect on the rupee exchange with the United States and other countries outside the British Empire. It emphasises the fact that sterling is at present not at parity with gold and agrees with Mr. Jevons in dissenting from the purely inflationary device of an expanding paper currency on the so-called security of Government of India Treasury Bills, which it describes as 'finance of paper on paper.' It lays stress on the fact that the first necessity is to balance the budget, after which a steady policy of deflation may be undertaken. The rupee will then tend to rise, and it should not be difficult to keep it around 16 pence. Quite apart from special devices, the one sure starting point, the paper concludes, is the adjustment of Imperial expenditure in India to Imperial revenue.

The wall street magnates estimate that Henry Ford is the richest man in the world, having overtaken Rockefeller. The Ford Car Company's assets this year amount to £27,750,000 after a deduction of £25 millions for taxes. This means that the Ford Works have a capital of £444 millions in the busy season and Henry Ford's income is £110,000 a day. The Ford Co.'s Works at Manchester are surprised at the report that there are negotiations for land in Southampton as the Manchester lease has several years to run.

* * *

France is pre-eminently an agricultural country. Before the war the production of its soil exceeded 25 milliards, and was daily increasing. There were, in 1913, in the whole of France 7,520,922 owners of 13,444,226 landed properties (excepting building sites). There were 2,798,295 owners who lived by cultivating their property alone or with assistance, 3,058,346 wage earners and 806,494 working farmers other than owners. That is to say, 33.09 per cent were working owners, 45.77 wage-earners and 21.14 non-owning farmers.

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Cambodia cotton is also known as American Cotton or (*Peria Paruthi* or big cotton) in many villages. The cultivation of this cotton is so well known in Coimbatore district that special mention about its cultivation is unnecessary. However leaflets on this crop are available for reference in the office of the Deputy Director of Agriculture, VIII Circle, (Jail Road), Coimbatore, and also from the Agricultural and Assistant Agricultural Demonstrators located in the Madras Taluks. As in the cultivation of Sugarcane, Turmeric, chillies, etc., in garden lands, the cotton may be dibbled in fields where ridges and furrows are made. This method of cultivation economises the seed-rate as well as gives facility for the cultivation to keep the field clean from weeds. By adopting this method of cultivation the ryot might expect a better yield from his fields. To minimize the insect attack on this cotton and to improve its qualities in general, good and selected seed, which is capable of giving a high yield, obtained from the crops grown under departmental supervision, is available in important centres in this district. The price is Re. 1-8-0 per maund of 25 lbs. and is the same in all the depots. Those who require the seed may get it on application to the Deputy Director of Agriculture, VIII Circle, Jail Road, Coimbatore.

The estimate of the Madras 1921-22 cotton crop is 347,000 bales of 400 lb. lint.

* * *

For the benefit of its farmers the French Government has established a service of wireless weather forecasts. These are sent out twice a day from the National Meteorological Office in Paris by wireless telephone. Each commune or parish has a receiving set at the parish school or police station. There the forecasts are posted as soon as received, and in the case of a coming storm, the farmers are warned by the ringing of a bell.

* * *

During the war, it being very difficult to import foodstuffs, profits from agriculture were very high. Mortgages were released. Peasants in some districts acquired ownership. There are of course still large number of peasants in different departments cultivating land which does not belong to them. But agricultural production in France has remained stationary for the last thirty years, while in the same period it has nearly doubled in Belgium, Denmark, Holland, Hungary, Switzerland and Germany.

* * *

Describing the development of manufacture of woollen goods throughout Australia, Messrs. Winchcombe, Carson, Ltd., state in their annual review that new mills have been started, and are in course of erection in New South Wales, Victoria and Tasmania, and those now in existence in the Commonwealth are working at high pressure. The local mills, the review states, are able to turn out material equal to that manufactured in almost any part of the world. Admittedly some rough tweeds are produced, but these are necessary in every country to cater for the cheaper class of trade. Tweeds, serges, woollens and worsteds, hosiery, underclothing and blankets turned out by the factories in the Commonwealth are all finding ready purchasers. The woollen mills now working total 52. Of this number Victoria supports 26, New South Wales 14, and Queensland 2. In addition, seven mills are engaged in making hosiery in the Commonwealth. 11 in making woollen underclothing and 25 are manufacturing blankets. In New South Wales alone, last year, factories treating raw material produced by the State's pastoral industry, added £2,500,000 to the value of those raw materials in the process of manufacture. The output of the New South Wales mills increased from 498,000 yards of cloth in 1906 to 2,162,486 yards in 1920.

A liquid containing 15 per cent of soluble cresol is claimed to be effective as an exterminator of the salt-water mosquito. A dilution of 1 part in 16,000 totally destroyed the mosquito larvæ in one hour, and 1 in 48,000 was fatal in 3½ hours. Treated water is harmless if any person happens to drink it.

* * *

The estimated budget of the Aligarh University for 1922-23 shows a reduction both in the income and the expenditure. The income for the year ending the 31st March, 1923, is expected to be Rs. 4,55,569 against Rs. 5,82,977 of the previous year and the expenditure of the former period is estimated to be Rs. 4,41,472, against Rs. 5,78,668.

* * *

Casein glues which have been widely used in aircraft work are as a class more water-resistant than animal and vegetable glues, but they are not, strictly speaking, waterproof. There is no glue that is waterproof in the sense that it is absolutely unaffected by water after a long immersion. Nevertheless there are casein glues that are so water-resistant that plywood glued with them will withstand soaking for many weeks in water or exposure for many months to a warm damp atmosphere. Under similar circumstances animal or vegetable glues would lose their strength in a short time. For this reason casein glue is specially valuable in automobile body construction.

* * *

Writing from Geneva a correspondent of the *Observer* says that the latest method of raising a foreign loan is such as to avoid any direct payment of cash or even the issue of bank drafts. Roumania recently required 15,000,000 gold francs as a loan from Switzerland. The Swiss Government and Bankers pointed out that the present financial state of Europe made it impossible to concede a loan, unless they knew for what purpose the money was intended. Roumania replied that she needed the money to purchase new rolling stock, and particularly engines. The Swiss offered rolling stock and engines to the value of 45,000 gold francs, and Roumania agreed to pay for them in kind of commodities that Switzerland needs. The payment took the form of cereals and petroleum and the transaction was satisfactorily concluded. Similar transactions are being conducted between Czecho-Slovakia and Switzerland where sugar and manufactured goods are being exchanged.



Economic Gleanings.

WORLD'S PROGRESS IN FEW WORDS.



It is reported from Jamacia that active operations will shortly be resumed by the North American Aluminium Company in the exploitation of the bauxite fields of British Guiana.

A new and interesting discovery of considerable importance to the glass trade is reported by two Czech engineers. The manufacture of glass and glassware is, of course, one of the leading and oldest-established industries of Czecho-Slovakia, Bohemian glass having enjoyed a reputation in all parts of the world for several centuries. The new discovery is that of a silica which is suitable for the production of raw glass without the aid of other ingredients. The mineral is of volcanic origin, somewhat resembling lava, and as the deposits are very extensive they should provide the Czecho-Slovak glass industry with a handy and cheap raw material. The discovery has naturally aroused much interest in trade circles.

The Queensland Parliament has confirmed the principle of granting loans to co-operative groups of farmers for the purpose of constructing tramways or maintaining motor-lorry services, for the conveyance of produce to the railway systems of the State. Under existing State laws loans may be granted for the co-operative construction of dairy factories, jam factories, and sugar mills. One of the chief difficulties of land settlement in various parts of Australia is getting produce cheaply to market. If the principle accepted by the Queensland Parliament is given effect there will be great economic benefit to farmers who at present have to cart their produce for long distances over rough roads by means of bullock or horse teams. Growers of perishables, such as fruit and dairy produce, would particularly benefit. The Government is being urged to give effect to a constructive policy of voting money annually for lending to co-operative groups on the lines proposed. In the past loans for co-operative effort in the construction of sugar mills, bacon and butter factories have all proved sound business propositions.

Each cabinet contains seventy samples, four inches by three, and half an inch thick. Each sample is named and initialled by Dr. F. W. Foxworthy, Forest Research Officer, F.M.S. They are smooth but unpolished, and it is thus possible to appreciate the beautiful grain of some of the woods and to judge their suitability for cabinet or other wood-work.

With commendable enterprise the Forest authorities of the Federated Malay States are giving the users of commercial woods an opportunity of making personal acquaintance of the products of the Malayan forests. A few cabinets of samples have arrived at the offices in Cannon-street of the Malay States Information Agency, where they may be obtained.

The Australian Minister for Customs, Mr. Rodgers, announces that the Government has decided to call a conference of the fruit-growing associations of the Commonwealth with a view to forming a national organization to deal with the whole question of fruit production and marketing. "We wish," says the Minister, "to see business men at the business end of the operation, and an organization established properly to control the whole output." Financial assistance is promised and it is proposed to create an organization similar to that recommended for the control of the dairying industry. The scheme provides for a Federal Board of Control, consisting of a representative from each State. In addition, each State would form advisory committees to keep in touch with the Federal Board. In the adjustment of prices each State would be treated as a separate entity. Advances to growers would be regulated by the Federal Board of Control. Following the dairying scheme each State would have a prior claim in satisfying its own local demands, and inter-State trading would only be undertaken to the extent of making up any actual shortage in another State. Standard grades would be fixed for export, and the Federal Board would make all necessary arrangements for storage and shipment.

The Governor of Jamaica has appointed a board to promote the publicity of the Island abroad, with a view to attracting tourists.

The *Cape Times* announces that as a preliminary to a larger investigation of trade possibilities in the African continent, the Union Government is about to dispatch a trade mission to Kenya. Hopes are entertained by the British Guiana Farmers' Conference that Canadian capitalists will interest themselves in the development of the banana industry of that Colony. Efforts are being made to send a small shipment of bananas to Montreal by one of the C.P.R. steamers, and the result of this experiment will influence the decision as to what action will be taken in the matter.

In the Australian House of Representatives the Prime Minister, Mr. Hughes, was asked a series of questions regarding the business done at Nauru Island by the British Phosphates Commission. Mr. Hughes, in the course of his reply, said:—For the first two years under the Commission (July 1, 1920 to June 30, 1922) 319,220 tons of rock phosphate, obtained solely from Nauru, were brought into Australia. From that amount of rock nearly double the weight of superphosphate was manufactured, worth approximately £3,750,000. Australian farmers were charged for the superphosphate from £5 10s to £6 12s. 6d. per ton in the different States, the average price being about £6. These prices were now falling in consequence of prices of raw material being considerably reduced by the Commission from July 1, 1922. Prices in New Zealand were slightly higher than in Australia. The report and balance sheet of the British Phosphate Commission for the year ended June 30, 1921, shows that the distribution of shipments was 72.96 per cent to Australia, 4.70 per cent to New Zealand, 4.59 per cent to the United Kingdom and 17.75 per cent to other countries. The trading account for the year showed that phosphate sales and sundry credits amounted to £1,304,739 13s. 11d. The debit side of the account showed f. o. b. cost of phosphate, including interest on capital, contribution to a sinking fund for the redemption of capital, and other charges in accordance with Article 11 of the Agreement of July 2, 1919, at £688,957 10s. 2d; phosphate freights at £613,096 14s 6d.; balance appropriated to a reserve account at £2,685 9s. 3d; total, £1,304,739 13s. 11d.

A trial consignment of Indian cotton has recently reached Barcelona, Spain, and reports from the mills which have been induced to use it are distinctly favourable. The long staple has been found admirable for local use, and the importer who brought in the shipment as an experiment predicts a signal success for the future of this product in Spain, and expects to secure large contracts.

L'Echo de Chine records the fact that at Shanghai—which before the war contained rather more than four thousand Germans and eighty-five German trading companies—twenty such firms, employing over seven hundred Germans, are already busily at work again. During the war not one of the enemy subjects remained in the town, but their return is proceeding very quickly. The Stinnes Group, by means of a contract concluded with a Chinese firm, has obtained a large measure of control over the coalfields of the Chai-Kiang province, and is to erect works at Shanghai, while the Chinese firm in question is to act as selling agent for all the Stinnes products. A German delegation has also visited the Far Eastern Republic of Chita, the gold-bearing mines and forests of which are coveted. The supply of furs, the principal normal wealth of the country, is practically exhausted. Therefore the Germans can hope to effect sales only against concessions, and not by an extensive barter system.

Interesting figures relating to co-operative effort in Australia were quoted by Mr. C. E. D. Meares at a dinner given by the Co-operative Milk Company, Limited, in Sydney. Mr. Meares said that the twelve co-operative distributing companies in Australia handled £25,000,000 of produce annually. Eleven of these companies had combined to establish a co-operative selling floor in London, and steps were being taken to set up also a collective buying agency for the benefit of the co-operative producers. The selling floor in London had been conspicuously successful. The turnover in fifteen months had reached £2,000,000. The produce handled included eggs, dried fruits, 12,000 tons of mutton, and 200,000 cases of fresh fruit. Sir Joseph Carruthers, Vice-President of the new South Wales Executive Council, who was present on behalf of the Government, foreshadowed legislation to protect co-operative societies and prevent companies which are not co-operative from representing themselves to be such.



Indian Fiscal Commission.

SUMMARY OF REPORT.



The Report of the Indian Fiscal Commission has been issued. The following are the principal recommendations :—

(1) That the Government of India adopt a policy of Protection to be applied with discrimination along the lines indicated in this Report.

(2) That the permanent Tariff Board be created whose duties will be, *inter alia*, to investigate the claims of particular industries to protection, to watch the operation of the Tariff, and generally to advise Government and the Legislature in carrying out the policy indicated above.

(3) That no general system of Imperial Preference be introduced, but that the question of adopting a policy of preferential duties on a limited number of commodities be referred to the Indian Legislatures after preliminary examination of the several cases by the Tariff Board.

(4) That the existing cotton Excise Duty in view of its past history and associations be unreservedly condemned, and that Government and the Legislature start again with a "clean slate", regulating their excise policy solely in the interests of India.

A dissenting minute is attached to the Report, signed by five members advocating unqualified Protection and the intense industrialization of India.

The terms of reference to the Commission were "to examine with reference to all the interests concerned the Tariff policy of the Government of India, including the question of the desirability of adopting the principle of Imperial Preference, and to make recommendations".

SUMMARY OF RECOMMENDATIONS.

That the industrial development of India has not been commensurate with the size of the country, its population, and its natural resources, and that a considerable development of Indian industries would be very much to the advantage of the country as a whole.

PRINCIPAL RECOMMENDATIONS.

(1) (a) That the Government of India adopt a policy of Protection to be applied with discrimination along the lines indicated in this Report.

(b) That discrimination be exercised in the selection of industries for protection, and in the degree of protection afforded, so as to make the inevitable burden on the community as light as is consistent with the due development of industries.

(c) That the Tariff Board (see below) in dealing with claims for protection must satisfy itself

(i) That the industry possesses natural advantages,

(ii) That without the help of protection it is not likely to develop at all, or not so rapidly as is desirable, and

(iii) That it will eventually be able to face world competition without protection.

(d) That raw materials and machinery be ordinarily admitted free of duty, and that semi-manufactured goods used in Indian Industries, be taxed as lightly as possible.

(e) That industries essential for purposes of National

Defence and for the development of which conditions in India are not unfavourable, be adequately protected if necessary.

(f) That no export duties be ordinarily imposed except for purely revenue purposes, and then only at very low rates; but that when it is considered necessary to restrict the export of food-grains, the restriction be effected by temporary export duties and not by prohibition.

(2) That a permanent Tariff Board be created whose duties will be, *inter alia*, to investigate the claims of particular industries to protection, to watch the operation of the Tariff, and generally to advise Government and the Legislature in carrying out the policy indicated above.

(3) (a) That no general system of Imperial Preference be introduced; but

(b) That the question of adopting a policy of preferential duties on a limited number of commodities be referred to the Indian Legislature after preliminary examination of the several cases by the Tariff Board.

(c) That if the above policy be adopted, its application be governed by the following principles :—

(i) That no preference be granted on any article without the approval of the Legislature.

(ii) That no preference given in any way diminish the protection required by Indian industries.

(iii) That preference do not involve on balance any appreciable economic loss to India.

(d) That any preference in which it may be found possible to give to the United Kingdom be granted as a free gift.

(e) That in the case of other parts of the Empire preference be granted only by agreements mutually advantageous.

(4) That the existing Cotton Excise Duty in view of its past history and associations be unreservedly condemned, and that Government and the Legislature start again with a "clean slate", regulating their excise policy solely in the interests of India.

SUBSIDIARY RECOMMENDATIONS.

(5) That the proviso to Section 20 of the Sea Customs Act be repealed, and that Customs Duty be ordinarily levied on goods belonging to Government.

(6) That difficulties in the shape of shipping rebates or unfair advantages like dumping, depreciated exchanges, bounty fed imports from abroad be investigated, and where possible, removed.

(7) That industrial development be promoted by giving a more industrial bias to primary education and providing opportunities for training apprentices, and organizations for increasing the mobility of labour.

(8) That no obstacle be raised to the free inflow of foreign capital, but that Government monopolies or concessions be granted only to companies incorporated and registered in India with rupee capital, such companies to have a reasonable proportion of Indian Directors, and to afford facilities for training Indian apprentices.

(9) That the Tariff be not ordinarily employed for retaliation or as a means of aggression.

(10) That the tariff be elaborated with a view to

remove ambiguities, and that the system of specific duties and Tariff valuations be cautiously extended.

FURTHER DETAILS.

On the first point, *viz.*, the tariff policy of the Government of India, the conclusion of the Commission is stated in the following words:—"We recommend in the best interests of India the adoption of a policy of protection to be applied with discrimination along the lines indicated in this report." The decision in favour of a policy of protection rather than one of free trade is based on a careful analysis of the probable gain and loss in Chapters IV, V and VI. It is shown that the industrial development of India has not been commensurate with the size of the country, its population and its natural resources, and that India will derive great advantages in many directions from a considerable development of Indian industries. It is then pointed out that the conditions for a rapid industrial advance are suitable and that without the stimulus of protective duties the advance will not be sufficiently rapid. The necessity of continuing to derive a high revenue from the tariff, which is apparent from a consideration of the financial situation, is also held to lead inevitably towards protection. On the other side of the account the loss involved by the burden of increased prices and the effect of this burden on various classes of the community is examined. It is shown that the exercise of discrimination in the selection of industries for protection and in the degree of protection afforded will ensure that the inevitable burden on the community is kept as light as is consistent with the due development of industries. The final conclusion is that, apart from the strong Indian sentiment in favour of protection, the balance of advantage on economic grounds is heavily on the side of the policy recommended.

THE POLICY JUSTIFIED.

The justification of the policy rests largely on the manner in which it is worked, as it is held that any type of indiscriminate protection would entail a sacrifice on the part of the mass of the people out of proportion to the results. This accounts for the great importance attached by the Commission to the Tariff Board which it proposes should be constituted. The Tariff Board will be the instrument by means of which the policy will be "applied with discrimination." It is proposed in Chapter XVII that the Tariff Board should be a permanent body consisting of three members of high standing and ability. The main duties of the Board will be to investigate and report on the claims of particular industries to protection, to watch the operation of the tariff, and generally to advise the Government and the Legislature in applying the policy in detail. The functions of the Board would be advisory, and not executive, but stress is laid on the necessity of making public its findings and recommendations.

Principles are laid down by the Commission in Chapter VII for the guidance of the Tariff Board. The three main conditions which should be satisfied in the case of an industry claiming protection are:—

- (a) That the industry possesses natural advantages;
- (b) that without the help of protection it is not likely to develop at all or not so rapidly as is desirable; and
- (c) that it will eventually be able to face world competition without protection.

As a qualification of these general conditions it is recommended that industries essential for purposes of national defence, and for the development of which conditions in India are not unfavourable, should,

if necessary, be adequately protected. Further, the general principles are laid down that raw materials and industrial machinery should ordinarily be admitted free of duty, and that partly manufactured goods used in Indian industries should be taxed as lightly as possible. The taxation of articles to which protectionist considerations do not apply will be outside the purview of the Tariff Board and will be regulated in accordance with the financial needs of the country.

Various supplementary measures are indicated in Chapter VIII as necessary in addition to protective duties, if full industrial development is to be attained. A more industrial bias should be given to primary education, opportunities should be provided for the training of Indian apprentices, and organizations for increasing the mobility of labour should be developed. The consideration of legislation against dumping is suggested, such legislation not to take the form of a general automatic measure, but to provide for the imposition of a dumping duty only in the case of particular commodities, and only when it has been established that dumping is taking place to the detriment of an Indian industry. Precautions are also suggested against imports from a country in which the exchange is seriously depreciated and against any system of export bounties granted by foreign countries. Reference is also made to the complaints of Indian industries against the railway rates policy and coastal shipping rates, and suggestions are made for meeting those complaints. The possibility of legislation directed against shipping rebates is suggested.

The tariff policy in India cannot be confined merely to a consideration of import duties. There are two other important classes of duties which are at present levied in India in connection with the tariff excise duties and export duties, and the Commission devotes two chapters to each of these. With regard to excise duties a general examination is made in Chapter IX of their nature, justification and effect and certain principles limiting their imposition are suggested. A separate Chapter (X) is given to the Indian cotton excise the history of which is described in detail. The conclusion of the Commission is that the existing duty should, in view of its past history and associations, be unreservedly condemned, that the British Government should announce its intention of allowing the Government of India to decide, in agreement with the Indian Legislature, what action should be taken, and that the Government of India and the Legislature should then begin with a clean slate and take such measures as the interests of India require.

EXPORT DUTIES.

Export duties are dealt with in Chapters XI and XII. The conclusions of the Commission are that export duties tend to injure the home produce and that they should therefore not be utilized for protective purposes. They may, however, under certain circumstances be imposed for revenue purposes, but they should be imposed with great caution, they should be imposed only on articles in which India has a monopoly or semi-monopoly, or in every case the duties should be moderate. The only exception to these principles which the Commission recognizes is when the price of foodstuffs shows a tendency to rise to dangerous heights. In such a case the Commission holds that it may be necessary to restrict the export of food grains and that as there are grave objections to direct Government prohibition or regulation of exports, the least objectionable measure would be a temporary export duty on food grains.

The Commission makes no definite recommendations

regarding the treatment of particular industries, holding that it had not sufficient material for the purpose, and that the necessary enquiries must be made by the Tariff Board. When, however, any principle laid down by the Commission admits of direct application, this is indicated, and accordingly the Commission definitely recommends the abolition, as early as possible, of the import duties on machinery and coal, and the export duties on hides and tea.

The second main subject referred to the Commission was the question of Imperial Preference and this is dealt with in Chapter XIII. The conclusions of the Commission are that any general system of preference to British products would involve a serious burden which it would not be reasonable for India to shoulder, while, on the other hand, the possibilities of advantage to India from preferences granted to her exports are limited. At the same time India may be in a position in certain cases to grant preferences which would be of assistance to British industries and would not cause appreciable economic loss to India. The advantages on broad Imperial grounds of recognizing the principles of Imperial Preference are pointed out, and it is suggested that the question of granting preferences on a limited number of commodities be referred to the Indian Legislature after preliminary examination of the several cases by the Tariff Board. If this policy is adopted it is recommended that its application be governed by the following principles:—

- (a) That no preference be granted on any article without the approval of the Legislature.
- (b) That no preferences should in any way diminish the protection required by Indian Industries.
- (c) That preference should not involve any appreciable economic loss to India after taking into account the economic gain which India derives from the preference granted her by the United Kingdom.

The above proposals relate entirely to preference to the United Kingdom, and it is recommended that any preferences which it may be found possible to grant to the United Kingdom should be granted as a free gift. In the case of the other parts of the Empire a different policy is recommended. It is suggested that the principle of reciprocity should be followed, i.e., that preference should be granted only as the result of agreements mutually advantageous.

REVIEW OF FINAL CHAPTERS.

In Chapter XIV the tariff is dealt with in its more technical aspect. The Commission recommends that the system of specific duties and tariff valuations should be extended cautiously and that the description of articles in the tariff should be elaborated. The system of double tariffs which prevails in most protectionist countries is condemned as unsuitable to Indian conditions, and the undesirability of employing the tariff as a means of aggression or, unless in exceptional circumstances, for purposes of retaliation is emphasized. The Commission recommends that in the interests of Indian industries customs duties should ordinarily be levied on goods belonging to the Government.

Chapter XV is devoted to a consideration of the attitude to be adopted towards foreign capital. The economic advantages of foreign capital to the country are explained, the present feelings of opposition to it are indicated, the restrictions on its employment which have been suggested are examined, and the conclusion is drawn that in the interests of the country no obstacles should be raised to the free inflow of foreign capital. It is, however, recommended that Government monopolies or concessions should be granted only to companies registered and incorporated

in India with rupee capital, having a reasonable proportion of Indian Directors and affording facilities for training Indian apprentices.

The position of Indian States is considered in Chapter XVI. It is pointed out that Indian States are closely concerned both as consumers and as producers in the tariff policy adopted for British India, but that their views on that policy coincide generally with those expressed in other parts of India, and that their interest will be fully safeguarded under the scheme of protection recommended.

The report begins and ends with a reference to the relations between India and Britain. In the first chapter stress is laid on the pronouncements of the British Government regarding the principle of fiscal autonomy for India. In the last Chapter the Commission explains that its recommendations have been based solely on the interests of India, but it also gives its reasons for holding that in this matter there is no real antagonism of interests between the two countries, and that a more prosperous India will mean a more prosperous Britain.

The Report is signed by all the members subject, however, to a Minute of Dissent by a minority consisting of the President Sir Ibrahim Rahimtulla and four Members Mr. T. V. Seshagiri Aiyar, Mr. G. D. Birla, Mr. Jamnadas Dwarkadas and Mr. Narottam Morarjee.

THE MINORITY'S MINUTE.

The minority firstly object to the conclusion of the Committee already quoted on the subject of protection. While agreeing that protection should be applied with discrimination, they consider that the conditions laid down in Chapter VII of the Report are too stringent; that immediate steps be taken to adopt an intense policy of industrialization; and that any discrimination necessary in the interests of consumers must be decided by the Government of India and the Indian Legislature.

Secondly, they would apply excise duties only to commodities such as alcohol and tobacco, whose consumption it is desirable to restrict. If more revenue is necessary, a few articles of luxury may be made subject to excise duty. They recommend immediate abolition of cotton excise duty.

Thirdly, on the question of Imperial Preference, they dissent in respect of the treatment to be accorded both to the United Kingdom and the self-governing Dominions. As regards the former, they hold that India cannot accept the principle of Imperial Preference until she has attained responsible Government and is able to regulate her fiscal policy by the vote of a wholly elected Legislature. They, however, consider that Indian opinion would be inclined to accept the immediate application of Imperial Preference provided conditions were created to place India at once on the same footing as the self-governing Dominions in the matter, and that even under the political status which India now enjoys matters might be arranged so as to bring about in practice the position which the Dominions enjoy. They, therefore, recommend that the power of initiating, granting, varying and withdrawing Imperial Preference should vest by legislation or other equally effective means in the non-official members of the Legislative Assembly. As regards the self-governing Dominions, they agree that negotiations should be opened for trade agreements on a basis of reciprocity, but that an essential precedent condition should be the recognition of the rights of the Indian people to a status of complete equality and the repeal of all anti-Asiatic law so far as they apply to the people of India.

Fourthly, as regards foreign capital, they consider that the recommendations of the Commission are inadequate and that all companies protected by tariff wall should be companies incorporated in India with Rupee Capital and with a reasonable proportion of Indian Directors and offering facilities for training Indian apprentices.

Fifthly, they agree that a Tariff Board is necessary, but recommended that the Chairman should be a trained lawyer of the status of a High Court Judge, that the two other members should be elected by the non-official members of the Legislature and that there should also be two assessors representing trade elected by the leading Chambers and Mercantile Associations in India who could be summoned at the discretion of the Board when their presence was required.

Finally, they hold that an intense effort at industrialization will rapidly increase India's prosperity and also her demand for manufactured articles both local and imported; and that the trade relations of India and the United Kingdom will thus be put on a sound economic basis, mutually beneficial to both.

SIR MONTAGU WEBB'S VIEWS.

Asked by a special correspondent of the *Daily Gazette* what were his views on the Minute of Dissent to the Report of the Indian Fiscal Commission, Sir Montagu Webb who was a member of the Commission replied: "I have read the Minute of Dissent with considerable surprise and disappointment. The central pillar of our Report is found in Chapter V, paragraph 55 and runs:—"We recommend in the best interests of India the adoption of a policy of protection to be applied with discrimination along the lines indicated in this Report." When I tell you that this main

recommendation was the subject of many days conferences whereat all views from those of extreme free traders to those of extreme protectionists were most carefully weighed and discussed, when I mention further that the exact wording of the recommendation was at length approved and accepted unanimously, and when I add that at the time of the signing of the Report by all Members of the Commission, no mention or hint was made that any member disapproved of or disagreed with this main recommendation, you can understand my astonishment to find the Minute of Dissent commencing with the remark that our main recommendation subscribed to all be it remembered "has been hedged in by conditions and provisos which are calculated to impair its utility." I deplore beyond measure that on an important occasion like this when our President had an opportunity of securing unanimity of opinion and so sending forth a Report of such strength that none could question it, he should have put his signature to an unanimous opinion early in July, and then, two months later, describe that opinion as hedged in by conditions calculated to make it worthless! Such a line of action can only destroy all confidence, and open the door to floods of criticism from extreme free traders, thus to some extent detracting from the very sound recommendations to be found in the main body of the Report. A great opportunity has been marred, and a fine reputation sacrificed. The other differences of opinion in the Minute of Dissent are relatively minor matters, and in truth the only ones on which I quite expected some of the Members of the Commission might desire to add supplementary notes, hardly to be called dissenting minutes."

Motor Taxation.

The appointment of a Departmental Committee of the Ministry of Transport to consider possible alternative methods of motor taxation, in view of the objections to the present system, appears at first sight to indicate a welcome degree of pliability. Careful perusal of the communication issued to the various motoring organizations this week cannot fail, however, to raise grave doubts as to whether what is really intended is not to perpetuate the present system by proving the impracticability of reverting to the petrol tax.

The Ministry knows that it can safely depend on a majority against reversion to the old system. The revenue produced from motor taxation in the year 1921-22 was some £2,000,000 more than had been estimated, and the proposal that methods of producing an "equivalent" revenue should now be discussed is somewhat ambiguous. Any new scheme that might be adopted as the result of the forthcoming investigation could not be applied until 1924, says the *Times Trade Supplement* correspondent.

It is proposed that the revenue then produced should be the same as that obtained in 1921-22? Would it not result in raising a larger sum if, as is certain, the number of vehicles on the road were by that time increased?

Before it is possible to submit to the Ministry detailed proposals showing exactly how the revenue is to be raised and what the resulting revenue will be, it is necessary to know what revenue is required. The first essential is therefore a perfectly clear statement as to the amount of money which will be required in the first year to which any new scheme would apply. If the Government's requirement in this respect were reasonable, one could set about the preparation of a

scheme. If the motoring interests found the Government's requirements unreasonable, they would have no alternative but to fight it from the first without committing themselves to supposed acquiescence by helping to devise a scheme which might be so applied as to operate unfairly against them.

Estimated expenditure on roads and bridges for the current year is considerably lower than it was last year. Probably the maximum has been reached and passed. Motor vehicles are already paying approximately 30 per cent of the total expenditure, not upon classified roads alone, but upon all the roads of the country.

If motor users are not careful, it is conceivable that their share of the burden will be much increased, or even that they will be made to shoulder the whole of it.

Assuming that this basis is given, it is still more questionable whether it would be good policy to attempt to secure a return to the petrol duty. Almost certainly it would be far wiser to modify and simplify the existing system. For instance, all the lighter vehicles might be taxed on the basis of horse-power, whatever the purpose to which they are put, and the formula on which horse-power is estimated might perhaps be improved.

According to the Belgian Government, 450 public buildings are to be restored in the devastated areas during 1922, and it is hoped that private enterprise will be responsible for the re-erection of between 20,000 and 25,000 dwelling houses.

The Choice between Free Trade and Protection.

The following are extracts from Chapter V of the Indian Fiscal Commission's Report, which deals with the main subject—the choice between Free Trade and Protection :—

THE POLICY RECOMMENDED.

The main subject on which we have been asked to report is the tariff policy of the Government of India. This means in effect that we have to decide whether a policy of free trade should be continued or whether industrial development, the importance of which we have explained in the preceding chapter, should be stimulated by a protective tariff. We think it convenient to state at once the conclusion on this point at which after the most careful consideration we have arrived, we recommend in the best interests of India the adoption of a policy of protection to be applied, with discrimination along the lines indicated in this Report. In this chapter we shall give the reasons which have led us to recommend the adoption of a policy of protection rather than one of free trade, and in the two succeeding chapters we shall explain why we hold that the policy of protection must be applied with discrimination and will outline the principles in accordance with which discrimination should, in our opinion, be applied.

STRONG FEELING IN FAVOUR OF PROTECTION.

We have mentioned in Chapter I the long-standing and insistent demand of the public for a revision of the tariff policy, and in the course of our tour, during which we heard evidence at all the chief centres in India, we received abundant proof of the wide extent of that demand. Not only the industrialists, who might be expected to benefit directly from a policy of protection, but traders and other classes of the community whose immediate interests might seem likely to suffer showed themselves preponderatingly in favour of protection. The evidence which was placed before us on behalf of Indian States was also to the same effect. We found a general conviction that the interests of the country required a policy of protection, and in face of that a disinclination even to consider whether the individual would or would not be injured.

ITS CAUSES.

This desire for a policy of protection has in many cases been strongly reinforced by a consideration of India's past. Travellers relate that before the advent of Europeans India was a country of great wealth. The riches of the courts of the Moghals, the beauty and quality of certain of India's manufactures, in particular of her cotton goods, and the lucrative trade that attracted western adventurers to this country, are matters of common knowledge. These writers, however, seldom glance at the economic conditions in which the great mass of the people lived. Patriotic Indians to-day looking round on the present condition of their country, see that the old fame and relative importance of India's manufactures have diminished, whilst great masses of their country-men are still poor and many are insufficiently fed and clothed. Contrasting this state of affairs with the treasures of the Moghals and the world reputation of the Dacca muslins and other Indian manufactures, and searching for the cause of this great change, many think that it is to be found in the policy of free trade which they believe to have been imposed on India not in her own interests, but in the interests of the British manufac-

turers. They see that other countries such as Japan have developed their manufactures to a remarkable degree under a system of protection, and they believe that Indians are fully capable of doing the same. They think that if India were allowed freedom to decide her policy in her own interests, she would regain her economic prosperity. The feeling that this path to riches barred by an outside power, and the suspicion that that outside power is actuated by selfish motives tend to stimulate the belief in the great results that would accrue from the adoption of a policy of protection. All these ideas are further reinforced by the new spirit of national pride, a spirit which in all countries tends to the encouragement of protectionist feeling by demanding so far as possible that the nation should manufacture what the nation uses.

EXAMPLE OF OTHER COUNTRIES.

The protectionist feeling in India to which we have referred is strengthened by a consideration of the tariff systems prevailing generally throughout the world and the relatively backward condition of Indian industries under a policy of free trade. With the exception of the United Kingdom all the great industrial nations of the world shelter their industries behind a protective wall and claim to owe their prosperity to the tariff protection which they enjoy. The general movement in Europe towards free trade which appeared to be setting in with the conclusion of the famous commercial treaty between England and France in 1860 lasted only for a few years, and was followed by a strong reaction, never perhaps stronger than in recent years, towards protection. In 1879 Germany definitely adopted a policy of protection from which she has never departed, and under which she had made up to the outbreak of the war astonishing industrial progress. In 1881 France turned her back on the free trade tendencies which had never really met with popular approval. In 1899 Japan, freed from the trammels of the treaty restrictions, utilized her autonomy to establish a protective tariff, which was considerably intensified in 1911. The United States, industrially one of the foremost countries in the world, has had ever since the time of the Civil War a very high protective tariff, and at the present moment appears to contemplate raising it still higher. The British Dominions too have, without exception, utilized the right of framing their tariff policies in their own interests to protect their industries by high duties.

CONDITIONS IN ENGLAND.

India can thus point to numerous precedents for the adoption of a policy of protection. Even in the case of England it may be noted that her industrial foundations, like those of all other countries, were laid under a system of high protection. The Lancashire cotton industry in its infancy was protected by an import duty which according to the evidence of Professor Hamilton stood for a number of years at about 65 per cent *ad valorem*. The English textile manufactures were further protected by a legal prohibition of the use of various competing foreign cloths. It is true that the great industrial development took place as the result of the mechanical inventions which revolutionized industry at the close of the 18th century, and that the part which the tariff bore at this stage was insignificant. Nevertheless the fact remains that it was not until English industries had attained

a marked pre-eminence that the tariff was felt to be a hindrance to industrial development. Moreover, the movement towards free trade was largely directed, in its earlier stages at any rate, by an antagonism to the protection not of industrial, but of agricultural interests.

The conditions in England for three quarters of a century have been unlike those in most countries, and particularly unlike those in India. England's economic life depends on the export of manufactured articles, the raw materials for which are largely imported. The maintenance of this vital export trade is obviously likely to be fostered by a policy based on free trade principles. In India on the contrary, there is an abundant supply of raw materials and a very large home market supplied in great part by foreign manufactures, whilst the export of Indian manufactures, though offering possibilities of considerable development, is comparatively small. But even in the special conditions of England doubts have been frequently raised as to the wisdom of too rigid an adherence to the free trade doctrine, and since the war departures from it have actually been made, as illustrated by (a) the duty of 33 per cent on motor cars (which has a protective effect), (b) the Safeguarding of Industries Act, and (c) the recent removal of the excise duty on sugar to encourage the nascent sugar beet industry.

PUBLIC SENTIMENT CONSIDERED.

We do not wish, however, to rest the case for protection in India on the sentiment of the Indian people or the example of other countries. We have considered most carefully the economic arguments and we hope to show that the policy which we advocate will stand this crucial test. But at the same time we have set forth frankly what we conceive to be the main bases of Indian protectionist feeling, because though we do not advocate the adoption of a tariff policy on other than the reasoned grounds which follow, we feel that it is important to realize that behind our reasoned advocacy is a strong public sentiment, and that while we shall treat a question of such moment to the future of India from the strictly economic point of view, it has also a political aspect which is at least worthy of notice.

THE PROPOSITIONS OF FREE TRADE.

In considering the issue between free trade and protection, it is necessary in the first place to examine the theoretical basis of the subject and to set forth what we understand to be the principles which are generally accepted by modern economic authorities on these difficult questions. The old free trade doctrine of the classical economists may be said to have rested on two propositions. It was assumed, firstly, that the capital and labour of a country, if left unfettered by any kind of Government regulation or restriction, would naturally be applied to those industries which would yield the greatest economic return. The capital and labour of a country both being limited in quantity, it is evidently of the utmost importance that they should be applied in the manner which will yield the best economic results, and it was held that the free interplay of economic forces would best determine the direction of the capital and labour of a country into those industries in which it has a comparative advantage over other countries. The second proposition was that the best economic results both for the world as a whole and for individual countries would be obtained by each country applying its capital and labour to those industries in which it had the greatest comparative advantage, and then exchanging the products of those industries for articles which

it was not able to produce so cheaply itself. This is the principle of the international division of labour.

THEIR QUALIFICATIONS.

Both these propositions have a *prima facie* validity which is not seriously contested. But they state only tendencies, and tendencies may be over-ridden by special circumstances. We are thus led to an examination of the generally recognized qualifications of these propositions.

In the first place there may clearly be cases in which the free interplay of economic forces will not secure the best utilization of the capital and labour resources of a country. In the competitive struggle, an initial advantage may prove to be a permanent advantage. A fully developed industry in one country may be able under conditions of unfettered competition to hinder the development of the same industry in another country possessing equal or even greater natural advantages. In these circumstances, the latter country may never, or only after long delay, succeed in applying its labour and capital to the best advantage of which they are capable, owing to the initial difficulties in making a start. These considerations were stated many years ago with admirable lucidity by John Stuart Mill, who wrote, "The superiority of one country over another in a branch of production often arises only from having begun it sooner. There may be no inherent advantage on one part or disadvantage on the other, but only, present superiority of acquired skill and experience. A country which has this skill and experience yet to acquire, may in other respects, be better adapted to the production than those which were earlier in the field."

The argument as stated above applies primarily to particular industries which are handicapped at the start by the competition of fully developed rivals, and could be used irrespective of the stage of industrial development attained by the country in which the new industry finds itself. But the argument has been applied with special force to industrially new countries in competition with those in which industries have long been established. The classical expression of this argument is to be found in the works of List, whose economic theories have exercised such a profound influence on the policy of the great protectionist countries. It is summed up by a modern English economist, Professor Pigou, who in dealing with List's arguments, writes as follows:—

"The main element of productive power, whose development involves a long process, is a population trained in the general atmosphere of industrial pursuits. If a country is entirely agricultural and has no important class of artisans or factory workers, the skill required for starting any particular kind of mill will be very difficult to get. 'Masters' foremen, and workmen must first either be trained up at home or procured from abroad, and the profitableness of the business has not been sufficiently tested to give capitalists confidence in its success.* For a long time, therefore, it is improbable that any works which may be started will be able to compete on equal terms with established foreign rivals, and that in spite of the fact that the industry in question may be one for which the country has great natural advantages. On the other hand, in a country which is already largely industrial, the initial difficulty involved in starting a new industry is likely to be much slighter. For much less time is required to obtain from among a people already accustomed to many varieties of factory work, hands capable of carrying on a new

* List's "National System of Political Economy."

variety of it. Further in an industrial community, those other important elements of productive power, organized systems of transport and of credit, which, in an agricultural country, may need themselves to be built up before manufactures can be profitably established, are presumably already in existence."

The *prima facie* advantages too of the international division of labour are subject to certain qualifications. It may be that in some circumstances the greatest amount of wealth would be secured by a degree of specialization which could not be regarded as conducing to the general interests of the country. In other words there are objects of state policy different from, and more important than, the mere acquisition of wealth. A country might produce the greatest amount of wealth by devoting itself wholly to agriculture, and yet such a one-sided development in virtue of its effect on the national character and institutions, might not be in wider interests of the country as a whole. Similarly considerations of national defence may set legitimate bounds to the extension of the principle of international division of labour.

CIRCUMSTANCES IN WHICH PROTECTION IS JUSTIFIABLE.

So far we have indicated what we take to be the circumstances in which economic theory might justify departures from the principle of free exchange of commodities between nations. It is admitted that in all such cases restrictions on free exchange involve some immediate economic loss. We turn once more to the economists for their verdict as to the circumstances in which such loss may justifiably be incurred. In the passage already referred to, John Stuart Mill says, "The only case in which, on mere principles of political economy, protecting duties can be defensible, is when they are imposed temporarily (especially in a young and rising nation) in hopes of naturalizing a foreign industry, in itself perfectly suitable to the circumstances of the country, A protecting duty, continued for a reasonable time, will sometimes be the least inconvenient mode in which the nation can tax itself for the support of such an experiment. List expresses himself more emphatically, "The nation must sacrifice and give up a measure of material prosperity in order to gain culture skill and powers of united production; it must sacrifice some present advantage in order to insure to itself future ones." There is one idea common to both writers—a present loss for a future gain—the gain we have already indicated. We now turn to consider what constitutes the loss.

THE BURDEN OF PROTECTION ARISING FROM INCREASED PRICES.

The burden of protection arises from the increase in prices. It is obvious that an import duty tends to raise the price not only of the imported article, but also of the competing locally produced article. Cases are analysed by the economists in which for special reasons or for temporary periods, the normal result does not follow or follows only partially. But broadly speaking, there is no dispute as to the tendency of import duties to raise the prices of the articles taxed. Further, when import duties are placed on a wide range of articles, there is a tendency for the general level of prices in the country to be raised; the rise is not confined to the particular articles taxed. For this phenomenon there are various causes. In the first place the import duties tend to go check the volume of imports with the result that a favourable balance of trade is created. This favourable balance is settled mainly by the import of the precious metals, and so far as these find their way into the currency, thereby increasing its

amount, the general level of prices tends to rise. In India this argument must be applied with caution, for the precious metals when imported are largely used for other purposes, and comparatively small quantities are likely to go to swell the volume of the currency. A less theoretical argument is that the increased cost caused by import duties enters generally into the cost of production of all articles manufactured in the country and into the cost of transportation. Duties on cotton cloth or on sugar, for instance, may raise the expenditure of the employees of an industry; to meet such increased expenditure higher wages are required; higher wages mean higher cost of production, and this in turn means that the product requires to be sold at a higher price. Instances might easily be multiplied. It may, we think, be taken as the view accepted by economists that a general increase in import duties tends to produce a general rise in prices of a country, and not merely rise in the price of imported articles and such locally produced articles as directly compete with them.

GRADUAL DIMINUTION OF THE BURDEN.

It is not our intention to suggest that the burden on the consumer arising from protective duties is necessarily permanent. On the contrary, if the industries to be protected are selected with due discrimination, the burden should gradually diminish and eventually cease altogether. But the process of diminution is not likely to be rapid, or to commence immediately. So long as foreign imports continue to enter in appreciable quantities, the price of the goods must in general be regulated by the price of the foreign imports, that is to say, the consumer will be paying the full foreign price *plus* the import duty. As the home industry develops in efficiency and reduces its cost of production, there will be at first no reduction in prices, but the decrease in the cost of production will merely go to swell the profits of the home industry. This will lead to the more rapid development of the home industry and will hasten the time when it is able to supply the home market almost in full. As foreign imports dwindle to small proportions, prices will become regulated more and more by the internal competition, and the consumer will then begin to derive the benefit from the increased efficiency of the local industry, and may, in the end, obtain the goods as cheaply as if he were free to import them without a duty. If the industry is one for which the country possesses marked natural advantages, he may even obtain them more cheaply.

APPLICATION OF GENERAL THEORIES TO INDIAN CONDITIONS.

We have indicated both the present loss and the future gain which a policy of protection might in general be expected to bring. We now come to the practical problem, which is to determine whether the circumstances of India are such that a stimulation of her industrial development by means of protective duties will bring in the end a gain to the country as a whole greater than the immediate loss.

CAUSES OF INDUSTRIAL BACKWARDNESS.

In Chapter IV we have stated our opinion that the industrial development of India has not been commensurate with the size of the country, its population and its natural resources. In considering how these conditions can best be remedied, it is necessary to attempt to diagnose the causes from which they have arisen. The industrial commission mentioned various factors as having operated to retard industrial development, for instance, the natural conservatism of the people, the inefficiency of labour, the absence of industrial and technical education, the lack of business

enterprise, the shyness of capital for new undertakings, and the want of proper organization for utilizing such capital as is available.

INDUSTRIAL APTITUDE IN THE PAST.

Some of these factors might suggest the idea that Indians were lacking in certain qualities necessary for success in industrial pursuits, and that therefore one of the foundations for a profitable application of protection, namely, a people fitted to make good use of it, was absent. We do not think that this idea is supported by past experience. If we take history as a guide to the future, we see that there have been times when the manufactures of the country attained a high degree of excellence and were well known beyond its borders. As the Industrial Commission explained India was at one time famous "for the high artistic skill of her craftsmen," and it was not until the industrial revolution of the 18th century that she began to fall behind in the industrial sphere and that in the words of the Industrial Commission "the erroneous idea that tropical countries, with their naturally fertile lands and trying climate, were suited to the production of raw materials rather than to manufactures" developed. The cotton manufactures of India which were exported in large quantities throughout Asia and Europe, the skill in shipbuilding which was at one time freely utilized by the East India Company, the working of iron which in the old days had been brought to a considerable pitch of excellence, the manufacture of steel sword blades commanding a great reputation in foreign countries, the exports of silk textiles and sugar, all prove that Indians exhibited a natural aptitude for industrial work, and that the present relative backwardness in this respect should not be regarded as indicating any obstacle to a wide development of industries in the future.

DIFFERENCES IN NATURAL APTITUDE DIMINISHING.

Further the unevenness of development to which the Industrial Commission drew attention appears to be due in part to a striking difference in natural aptitude for industries, which can be traced in different communities in India. For centuries the people of Western India have shown a marked instinct for commerce; and from commerce they have moved naturally to industries, so that at the present time, they divide with the European community the industrial leadership of India. But the people of Bengal, Madras and Burma have in general neglected industrial pursuits, and if industries have established themselves within their borders, have left their development to others. It would take us beyond our province to attempt to trace these tendencies to their origin, whether it may be found in a fertile soil providing a livelihood in return for little labour, or in a social system which exalts the less material side of life, in economic conditions which produce a class of middlemen living parasitically on the profits of the land, or in historical traditions which attract the most enterprising classes to administration. Whatever the causes of this neglect in the past, we feel that in many parts of the country a change has come over the spirit of the people, and that what is lacking now is more often the opportunity than the will. We think, therefore, that so far as the comparatively slow development of industries in India has been due to lack of natural aptitude or interest, this factor will become progressively of less importance, and that a time has come when India is prepared to take advantage of any stimulus applied to her industries.

INDUSTRIAL DEVELOPMENT REQUIRES TO BE STIMULATED BY PROTECTIVE DUTIES.

The question which we have to determine is whether the industrial development at which we aim can be attained without the stimulus of protective duties, and if not, whether the advantage to the country arising from this industrial development will outweigh the burden which protective duties will impose. The Industrial Commission, which was debarred from considering questions of tariff policy, made a number of important recommendations for the development of Indian industries, involving the abandonment of a *laissez faire* policy. But we hold that these measures by themselves will not produce that marked impetus for which the time and conditions are now ripe. Education can be improved, banking facilities can be extended, technical assistance can be offered to industries, but what is mainly wanted is a policy that will inspire confidence and encourage enterprise, and we do not think that the recommendations of the Industrial Commission provide this. Professor Pigou at the close of the passage which we have already quoted draws the following weighty conclusion "From these considerations it follows that the case of protection with a view to building up productive power is strong in any agricultural country which seems to possess natural advantages for manufacturing. In such a country the immediate loss arising from the check to the exchange of native produce for foreign manufactures may well be outweighed by the gain from the greater rapidity with which the home manufacturing power is developed. The 'crutches to teach the new manufactures to walk,' as Colbert called protective duties, may teach them this so much earlier than they would have learnt it, if left to themselves, that the cost of the crutches is more than repaid." The words might almost have been written with direct reference to the conditions of India, and the case of protection in India can hardly be stated better. India is an agricultural country which possesses undoubted natural advantages for manufacturing. She produces in abundance of raw materials, she has an ample potential supply of cheap labour and adequate sources of power; and the establishment of two great manufacturing industries shows that she is capable of turning these natural advantages to use. We have been told by many witnesses that the chief obstacle to a more rapid development of industries in India is a certain want of confidence among the owners of capital. The practical protection afforded by the war had a stimulating effect on many Indian industries. But this protection and such incidental protection as is yielded by high revenue duties lacks the assurance of permanence, and fails to give the sense of security which arises from the deliberate adoption of a policy of protection. This point of view was perhaps expressed most clearly by Mr. Shakespear giving evidence on behalf of the Indian Sugar Producers' Association. He said "My personal view is that it is the principle of the thing which we, as an industry, would like to see far more than an actual duty of 15, 20 or 25 per cent. If the principle of protecting the industry is accepted, that is what is going to be of value to us in developing the industry." Again, Captain E. V. Sassoon, one of the leading Bombay industrialists after stating that Indian capital was "shy of anything new in the way of industrial enterprise" said, "what is wanted is confidence and a policy of protection would help to secure that at once."

THE GAIN PROTECTION WILL BRING.

We have now shown that India will derive very great advantages from industrial development, that the conditions for a rapid advance are suitable, and that without the stimulus of protective duties, the advance will not be sufficiently rapid. All these considerations lead us to the conclusion that protection will bring a very material gain to the country.

NECESSITY OF DERIVING A HIGH REVENUE FROM THE TARIFF.

A further consideration pointing to the same conclusion will be found in the present tariff position in India. We have referred in Chapter II to the increasing proportion which customs revenue bears to the total Imperial revenues, and we have now to consider whether this tendency is likely to be permanent. We received a considerable amount of evidence regarding the respective merits of direct and indirect taxation. We do not propose to recapitulate the well-worn arguments of the economists on this subject, but we are bound to take note of the fact that the general sentiment of Indian witnesses was strongly opposed to direct taxation, and that the collection of income-tax in India presents peculiar difficulties. Direct taxes in India are confined practically to income-tax and land revenue. With the latter, which is provincial receipt, we are not concerned. The income-tax rates have been raised largely since 1915-16 and the yield has risen from 3 to about 20 crores of rupees. High taxes on income are undoubtedly a handicap to industrial development, and there are many who hold that the rates ruling at the present moment are distinctly too high for the interests of Industries and the general prosperity of the country. The witnesses whom we examined on this point were almost unanimous in the opinion that direct taxation has reached its limit under present conditions, and in view of the general feeling in the country we do not think that any material increase in this form of taxation is feasible. If, therefore, any further increase in taxation becomes necessary it will have to take the form of indirect taxation. If, on the other hand, a decrease in taxation became possible, we think that it should take the form of a *pari passu* reduction in direct and indirect taxation. In view of these conclusions we cannot anticipate for many years to come any appreciable reduction in the revenue which it is necessary to derive from the customs. This means that import duties must continue high, and that, whether intended or not, protection will be given.

A HIGH REVENUE TARIFF INEVITABLY LEADS TO PROTECTION.

But a high revenue tariff such as that now in force in India is open to great objection. A revenue tariff based on free trade principles is one that is imposed on goods that cannot be produced in the country; or, if this condition cannot be observed, it must be kept at a very low rate on goods produced in the country, or countervailing excises must be imposed, so that no protection is afforded to local industries. Until the year 1916 the Indian Tariff might be said to have fulfilled these conditions. But since 1916, the tariff has become less and less consistent with purely free trade principles. It gives protection, but it gives it in the least convenient and the least beneficial way. The protection is not calculated on the needs of the industry, nor does it carry any assurance of a permanent policy. It is casual and haphazard. Moreover, it may actually impede industrial development by taxing raw-materials and semi-manu-

factured articles. It appears to us, therefore, that the necessity for raising a large revenue from customs duties and the obvious inexpediency of ignoring the effect of those duties on the industries of the country must inevitably lead India to the adoption of a policy of protection, as they led Germany in 1879.

THE LOSS PROTECTION WILL INVOLVE.

We turn now to the loss that must be set against the gain to India from protection to which we have referred in paragraph 75. The most important item is the burden of increased prices that protective duties will impose on the people. We have explained the nature of this burden in paragraph 68 above and we proceed to consider whether it will be so great as to outweigh the advantages which we anticipate from the adoption of a protective policy.

THE PROBABLE BURDEN ON THE POORER CLASSES.

As import duties have a tendency in some degree to extend their influence beyond the particular commodities on which they are imposed, it is necessary to treat with caution the argument that some article is not consumed by the poorer classes and that therefore a protective duty on it can do them no harm. A further limitation of this argument is to be found in the fact that there are frequently partial substitutes for imported articles, which are manufactured and consumed locally, and that any cause which raises the price of the imported article raises the price also of the locally produced substitutes. An obvious instance of such a case is seen in cotton cloth. Experience as well as theoretical reasoning, shows that the price of Indian manufactured cloth is influenced by the price of imported cloth, even when the two classes are not in direct competition. In estimating, therefore, the extent to which the poorer classes will be affected by protection, it is not safe merely to ask what proportion of their income is spent on imported goods. We have received various estimates on this point, and all agree that the actual quantity of imported goods purchased by the masses of India is small. But this is no final criterion of the degree to which protection will affect them, though there is no reason to suppose that, under the system we recommend, the indirect burden will be considerable.

EFFECT OF PROTECTION (a) ON THE AGRICULTURAL CLASSES.

There are, however, two classes of the population whose interests as affected by protection it is particularly important to consider the agricultural and middle classes. Agriculture is, and must remain, the foundation of the economic life of India, and this not merely because it furnishes the livelihood of three-quarters of the population. Indian industries cannot flourish without a prosperous Indian agriculture. Agriculture is largely the provider of the raw materials for industry, and the Indian agriculturist will offer the main market for the products of the Indian industries. Any form of protection, therefore, which would seriously affect the interests of agriculture would go far to defeat its own object. We have already explained in what ways we think that industrial development may be of advantage to the agricultural community, in some cases through a sympathetic rise in wages, in others through the wages of industrial workers being made available for expenditure in the villages, in others through a reduction in the number dependent on the produce of the land. But while a policy of protection of industries may not injure the agricultural wage earner, who may be able to secure a rise in wages equal to and in some cases greater than the rise in the cost of living, there can be little doubt that the

agricultural producer, the man who either works the land himself or employs hired labour, must suffer to some extent. Protection must mean to him a higher cost of production, arising partly from the higher cost of implements that he uses, partly from the higher wages that he will have to pay and partly from the general rise in the cost of living. As a set off against this higher cost of production, it is probable that, in the neighbourhood of industrial centres, the demand for agricultural produce will raise the price. But in general, one of two results seems likely to follow. Either the agricultural producer will not receive for his produce an increased price which will fully compensate him for the increased cost of production, in which case agricultural interests would suffer and there would be a tendency for marginal land to go out of cultivation; or the price of agricultural produce will be raised generally to cover the increased cost of production with injurious effects on the mass of the population. Provided, however, protection is applied with discrimination we do not think that the burden imposed, either on the agricultural producer or, though a rise in the prices of agricultural produce, on the consumer in general need be sufficient to make us hesitate regarding the net advantages of the policy we recommend.

(b) ON THE MIDDLE CLASSES.

With regard to the middle classes, by which we mean mainly the professional, clerical and petty trading classes, there is no doubt that they will be more adversely affected than any others by a policy of protection. The middle classes have a certain standard of living which entails expenditure on imported goods. Their cost of living will undoubtedly rise. The possibilities of equivalent, or at any rate timely expansion in their incomes, however, are limited. It is probable, therefore that for some period they will feel the effects of protection more than any other class of the population. But in the virtue of their education they, more than other classes, are in a position to estimate the value to the country as a whole of the developments which we believe our policy will produce, and so far as we have been able to judge from those witnesses who have given evidence before us, the middle classes are prepared to merge what might be regarded as their own immediate interests in the wider interests of the country.

INDISCRIMINATE PROTECTION NOT CONTEMPLATED.

In estimating the burden of protection we have to anticipate the arguments given in the next chapter,

in which we show that any type of indiscriminate protection would entail a sacrifice out of protection to the results. We explain in that chapter the limitations that we propose with a view to restricting the immediate loss as far as possible without reducing the gain that is to be anticipated from protection. If these limitations are observed we consider that the burden will be one which it is reasonable to ask the country to bear in order to secure the great benefits anticipated.

CERTAIN DISADVANTAGES OF PROTECTION TAKEN INTO ACCOUNT.

Before coming to our final conclusion we must refer to disadvantages which are inherent in any system of protection, namely, the risk of encouraging inefficient methods of production, the danger of political corruption and the possibility of combinations of manufacturers. We have borne these points in mind in formulating our scheme of protection and in devising the constitution of the Tariff Board. We explain in detail in Chapter VI to what extent we think these dangers will be mitigated by our proposals, and it is enough to say here that we do not consider them sufficiently serious to affect our main conclusion.

THE BALANCE OF ADVANTAGE.

We have now set forth, as impartially as possible, the arguments for and against the adoption of a policy of protection in India. In Chapter IV we have shown the great benefits that will accrue to India from industrial development, and in the present chapter, we have explained the necessity of the stimulus of protection to secure rapid progress in this direction. We have also shown that the necessity of a high customs revenue is inevitably leading India towards protection. On the other side, we have shown that the immediate loss to be apprehended from protection, and the dangers inherent in it, will be mitigated by the system of discrimination which we recommend and by the constant supervision of our proposed Tariff Board. We have carefully considered the weight of the arguments on both sides, and apart from the strong Indian sentiment in favour of protection, to which we have referred above, we are satisfied, on economic grounds, that the temporary loss involved will be more than made good by the ultimate gain, and that the balance of advantage is heavily on the side of the recommendation made in the opening paragraph of this chapter, viz., the adoption of a policy of protection to be applied with discrimination along the lines indicated in this report.

Indian Family Budget.

The results of the detailed examination of over 3,000 working class family budgets collected by the investigators of the Labour Office will be published shortly. In the current issue of the *Labour Gazette*, however, appears an analysis on the same subject but based on less detailed figures collected by the Provincial Superintendent of Census. In this enquiry the families represent agricultural labourers, clerks, artisans, traders and the professional classes. The results arrived at are of considerable interest and are worth examination. The table giving the distribution of expenditure for the poorest and the richest budgets examined shows that the former spend 68 per cent of their income on food and the richest 36.5 per cent but it is rather remarkable that the poor man's expenditure on "clothing" is put at 15 per cent and the rich man's at only 12 per cent. The figure "for rent" is the same in both cases. The extent to which families are crippled by debt is exhibited by another table which shows that in Guzerat 53 per cent of families with per capital incomes under Rs. 75 per

annum are indebted to money-lenders. The figures for Konkan are 68 per cent, Deccan 62 per cent, Karnatak 54 per cent, and Sindh 78 per cent. In Guzerat 19 per cent of families with 375 rupees a year and over owe money to money-lenders. For the rest of the Presidency the results show Konkan 30 per cent, Deccan 34 per cent, Karnatak 19 per cent, and Sindh 12 per cent.

An analysis of 293 family budgets collected from scavengers employed in Bombay city, which appears in the same issue shows that the expenditure on food varies from 51 to 54 per cent, while 'Interest on debts' accounts for a substantial percentage of the balance remaining. The budget of a male sweeper earning Rs. 23 a month living with his family in Bombay shows a minus balance of 1½ rupees, but a man and a woman with a joint income of Rs. 42 show a plus balance of Rs. 4½. The figures will well repay study by all those interested in economic conditions of the depressed classes.

Economic Reviews Reviewed.

WITH EXCERPTS AND COMMENTS.

Banker and Customer.

Mr. John Brunton writing in the *Time Trade Supplement* under the above heading says :—

It was Bacon who wrote in one of his essays : "Let it be no bank, or common stock, but every man be master of his own money. Not that I altogether mislike banks, but they will hardly be brooked." Since his days we have travelled far, and the vast capital resources now in the hands of the banks show that the public as a whole do not share Bacon's sentiments.

English banking, by a process of amalgamations, is now represented in the main by a comparatively few large and well-managed joint-stock institutions, deservedly possessing the confidence of the community and controlling, by reason of that confidence, huge sums entrusted to their care by their depositors.

In exercising its functions as a dealer in credit a bank best serves its own interests by doing everything—within reasonable bounds—to facilitate commerce and to assist its customers in carrying on their daily business. The part hitherto played by banks in this respect is best illustrated by reference to their balance-sheets as at December 31 last, when, taking the five leading joint-stock banks, their combined deposits at that date amounted to approximately 1,644 million pounds, while the total advances and discounts, including Treasury bills, amounted to 1,073 million pounds, or 65.2 per cent of the deposits. The capital and reserve funds of these institutions on the same date mentioned were a little over 106 million pounds.

The business of banking is, therefore, conducted on comparatively small share capital, and it is these great sums of deposit money which furnish the main spring of a bank's activities; in other words, banks trade principally with other people's money, and this money they may be called upon to repay on demand or at short notice.

BANKING PROFITS.

Bearing in mind this fact, it follows that while a bank's operations must be conducted with a view to profit, as in any other business, liquidity of assets is a paramount consideration and the controlling factor in the business of lending. Speaking broadly, a banker's ordinary profit is derived from the difference between the rate which he pays for his deposits; the commission he receives for other services, and the rate at which he can employ the money, including his own capital and reserve fund. Depositors and borrowers are alike in one respect—they love a bargain; but obviously a banker's deposit rate must, after all, be governed by the rate at which he can lend or employ his funds, and from the gross returns must be deducted his working expenses, provision for bad debts, additions to reserve funds, depreciation, and loss of interest on cash reserves. This latter item is considerable, and its true bearing on a bank's profit earning capacity is not always appreciated; it will

be better understood when it is realized that the banks above referred to held in their respective tills and at the Bank of England at December 31 last actual cash amounting to a sum more than twice their total capital and reserve funds, on which no interest was being earned.

Bank customers may be classified as those who lend to the banker and those who borrow from him by way of loan, overdraft, or discounts. With the former it is merely a question of arranging the rate of interest to be allowed, and the charge to be made for banking services rendered, but with the latter well-established principles are involved, on the correct application of which a bank's prosperity depends. Its customers comprise the small firm and the large, and to a rapidly increasing extent the limited liability company, and are representative of every kind of industry. In dealing with a request for banking accommodation, no matter from what source, the essential points present to the mind of a banker are the purpose for which the advance is required, the prospect of repayment, and the security, as afforded by the customer's financial position or by tangible securities.

DEPOSITS AND ADVANCES.

It has been pointed out that a bank's deposit money is repayable on demand or at short notice, and the whole theory of successful banking rests on maintaining an equilibrium between the ebb and flow of deposits and the advances. However improbable may be the contingency of a bank's depositors making demand simultaneously for repayment of their deposits, this liability to repay on demand is nevertheless the key to the banker's business policy; and his chief aim must always be the maintenance of an adequate proportion of liquid and readily realizable assets. Stated as a general principle, it is outside a banker's province to find money for "permanent" or "fixed" capital such as the engineer sinks in his foundry and machinery, or the land-owner expends in draining and improving his land, or the coal owner spends in sinking his shafts and installing pumping machinery. In all such cases, the returns are too slow, the lending becomes more or less an investment which cannot readily be turned into cash.

On the other hand, it is rarely that a banker turns a deaf ear to a request for accommodation for trading or manufacturing purposes, or for any legitimate object, if required for a temporary period. The customer's financial position, his turnover, and the nature of his account, are the factors which weigh with the banker. Needless to say, such requests do not at times err on the side of modesty, and the banker is obliged to refuse, say, the half partnership which compliance would in effect bring about. Or it may be that a firm has used up its available capital in permanent assets, and applies to its banker for the necessary trading capital. The would-be borrower in this case overlooks the fact that bankers are few, but borrowers numerous, and equitable treatment of all is a banker's first duty.

A trader may with propriety borrow from his banker,

but his own capital should of itself be sufficient, in normal circumstances, to satisfy his liabilities. He should not learn to rely upon his banker for any permanent addition to his working capital, even if covered by security, since it would then appear that the security would be better realized, and used in his business where it is evidently needed.

Application is frequently made to a banker for an advance for investment purposes, by some eager customer who sees an opportunity of making money easily. But, obviously, legitimate investment may only be effected by savings from income or from business profits, and not by borrowing.

SECURITY FOR LOANS.

Proceeding a step further in our analysis of the banker's attitude, it is an elementary principle that a lender should have security for his loan. The man who borrows from his banker may earn 10 per cent, 15 per cent, or 20 per cent. with the money, and while it is true that he takes his trading risks, he, nevertheless, stands to reap the greater benefit, and it is only equitable in such circumstances that the banker should be protected, at least, against loss. In practice, however, a customer is judged chiefly by his financial position, as it may be known to the banker, or as disclosed by his balance-sheet, and unsecured advances for temporary trade requirements bulk largely in a banker's operations. Where security is arranged for, it should be of a realizable nature; for example, Stock Exchange securities or mercantile documents of title. These ideals are, however, not always attained, and local conditions really guide a banker in determining whether he will or will not agree to a loan.

Real property is often accepted, provided its condition is good and the valuation shows the necessary margin. The objection, however, to this latter class of security is that some customers incline to confuse the functions of a bank with those of a building society! A guarantee by a good third party is a simple and a useful form of security, but many people give their name to a guarantee because they feel sure that they will never be called upon to pay. No person should accept these contingent liabilities lightly, since no one is immune from the risks of financial misfortune. Life policies carrying surrender values are also much in favour, for obvious reasons. There is a further form of security which, with the increase of joint stock companies, is now common, that is, the debenture charge on the property and assets of a limited company. The debenture, unless it is part of an issue realizable on the Stock Exchange, is a much overrated security, since the company is free to deal with its trade assets until the charge contained in the debenture crystallizes. How often it happens that the crystallizing process is only put into operation after the concern has experienced bad times, and after assets, on which the banker has been depending, have been realized in order to stave off pressing claims! A debenture tends to give a false sense of security, and its enforcement is generally unpleasant. In some quarters, too, a disposition to regard advances against debentures as permanent capital is apparent; in fact, very frequently, an undue proportion of capital is thus raised by public companies, a practice which reverses the sound principle that a company should trade mainly on its share capital and not on capital borrowed.

NEED FOR MUTUAL CONFIDENCE.

If a customer tenders a request for unsecured accommodation, one would naturally expect him to disclose his financial position by producing his balance-

sheet, but with human nature as it is, this request is not always gracefully met. This undue sensitiveness is misplaced, and probably in some cases results in the customer not obtaining the measure of accommodation he might obtain if the banker were made fully acquainted with his financial position. In the long run it would be to the benefit of both that a full measure of confidence should be established.

The relationship of banker and customer is primarily that of debtor and creditor, but there are other directions in which a banker to-day renders services to his customer, and these may be indicated briefly. He will act as your trustee or executor, and will thereby assure that continuity of succession which a corporate body enjoys, thus obviating the expense and trouble consequent on the death of an individual holder of an office of this nature. There is also freedom from the risks of mal-administration of funds, since a corporation, although a person in the eyes of the law, is immune from human faults and failings.

Again, a banker's strong room offers safe keeping for your valuables; and he will relieve you of the troublesome duties connected with the collection of coupons and the drawing of bonds. He will place at your disposal the advice and the services of reputable stock-brokers, no small advantage to those who might otherwise get in touch with undesirable people.

Nearly 60 years ago Bagehot said, "Banking in England goes on growing, multiplying, and changing. The facts of it are one thing to-day and another to-morrow. Everything changes." The developments of recent years have proved the truth of this statement, and banks to-day have assumed an international character. The private banker of Bagehot's time has been replaced by the joint-stock institution, with its network of branches, its subsidiaries, and its chain of agents and correspondents at home and abroad. This is a natural corollary to the changes which have occurred, and are occurring, in the mercantile world, where the private merchant and manufacturer are being gradually displaced by great limited liability companies and combines. Concentration of banking resources has had perforce to follow similar concentration in trade and manufacture. Is the change detrimental to the small firm from a banking point of view?

There are those among us who deplore the passing of the private banker and the small country bank, and fear that the honesty of purpose and business ability, which so often received the timely assistance necessary to achieve success, will no longer carry weight with the administrative heads who are seated, it may be, far away from local influences and conditions. It may be that, here and there, there are cases of individual hardship. Yet it should be remembered that the branch manager of the present day is invariably a sound banker and a shrewd business man; he is chosen with special reference to his qualifications for the branch to which he is appointed. Speaking from a fairly lengthy experience, the writer can say that no reasonable application for accommodation is lightly turned aside by the advance department; every effort is made to meet a customer's requirements. Further, full weight is attached to the manager's testimony on the score of character and ability; these qualities are still granted their full meed of recognition.

GERMAN METHODS.

The reproach has often been levelled at our English banks that their lending policy is too cautious, and

that it would be well for them to adopt some of the methods of the German institutions.

Unless this article has been singularly unsuccessful in its object, it will have been perceived that the banker's duty to his depositors must determine the nature of his lendings. If complaints of this nature could be investigated, it would probably be found, in many cases, that a disgruntled customer had asked his banker to take all the risk, while he took all the profit, and had rightly been refused. On the whole, modern banking development has been for the good of the community at large. Bank directorates are composed of trained bankers and successful business men; and the management is in the hands of men of tried knowledge and experience, trained in the best traditions of English banking. For the transaction of home and foreign trade, traders are afforded facilities which the small banks of yesterday were not in a position to offer, and the comprehensive system of branch banks ensures the employment of capital to the best advantage.

The Madras University Bill.

Madras, says the *Times Literary Supplement*, is the first of the three Presidency Universities to be the subject of a published Bill designed to alter fundamentally the basis upon which they were each founded some sixty-five years ago. The Education Minister, Mr. Patro, has circulated for opinion a draft Bill to reorganize the University, and it will be submitted to the Cabinet and then to the Legislature, after the views of the public bodies and individuals consulted have been received. The draft seeks to adopt to the conditions of the Southern Presidency many of the ideals in respect to Indian education first expounded in detail in the Sadler Commission report on the Calcutta University, and since applied in varying degree to the new Universities of Dacca and Lucknow and to Allahabad.

In none of those cases are the conditions analogous to those of the far-stretching Southern Presidency, and while a teaching and residential university is contemplated for the capital and its suburbs, it is proposed that the University should continue to exercise control over the colleges of the mofussil affiliated thereto. Madras is a city of "magnificent distances" and in this case, as in those of Calcutta and Bombay it will be necessary to make the area for "constituent" colleges fairly wide. Conditions are similar to those of London but with the difference that there are not alternative universities within the province. Accordingly the Draft Bill proposes a radius of ten miles from Fort St. George, and within those limits the University will exercise control and carry on teaching on lines with which we are familiar in the West.

THE COURT.

As in the case of other Universities created or legislated upon since the Sadler Report was published, the governing body will not be termed the Senate, but the Court. This body will be overwhelmingly non-official in composition, being largely elective by such constituencies as the registered graduates, the Legislative Council, the principals of second grade colleges, the Madras Corporation, the Chambers of

Commerce, and associations or individuals contributing in various ways to the purposes of the university. There will be a number of ex-officio members, and the Chancellor (who will continue to be the Presidency Governor) will have the power to appoint life members on the ground that they have rendered eminent service to education. The Chancellor also will have the power to nominate twenty-five members, of whom not less than fifteen may be appointed to secure the representation of communities not otherwise adequately represented. Election and nomination will ordinarily be for three years. The Court is to meet at least once a year, and special meetings may be called by the Vice-Chancellor, who will be bound to summon a meeting on the requisition of not less than thirty-five members.

THE EXECUTIVE COUNCIL.

The Executive Council is to be an expert body, consisting of the Vice-Chancellor and the Director of Public Instruction as ex-officio members, six elected representatives of the Court, two members representing the Academic Council, two representing the Council of Affiliated Colleges, and two members appointed by the Chancellor. It is to hold, control and administer the property of the University; to appoint the teacher and other servants of the University, fix their emoluments, and define their duties; arrange for and direct the inspection of all constituent colleges, hostels and affiliated colleges, and generally administer the affairs of the University.

THE ACADEMIC BODY.

The Academic body is to have the control and general regulation and be responsible for the maintenance of standards of teaching and examination within the University. It will make proposals to the Executive Council for the institution of professorships, readerships, lectureships or other teaching posts, and in regard to the duties and emoluments thereof. It will constitute committees of itself and faculties in arts, science, law, medicine, engineering, teaching, commerce and agriculture. The Academic Body will be composed almost entirely of members engaged in the work of teaching or in education administration. It will include the principals of first-grade and constituent colleges, and five principals of second-grade colleges elected by the principals of those colleges.

The affiliated colleges outside the ten miles' limit will form themselves into a council, which in its turn, will have an Executive Committee consisting of the Vice-Chancellor and ten persons elected by the Council. Certain tests will be applied as to the fitness of a college for affiliation, but no decision affecting the status of an affiliated college is to be made by the University except after consultation with the Council of affiliated colleges. The examination fees and other resources of these colleges will be separately administered by the Council. These arrangements will facilitate the constitution in due time of those distinct universities for the Andhra and Dravida areas of the Presidency which often have been advocated.

THE SALARIED VICE-CHANCELLOR.

It may be hoped that the provision for a whole-time salaried Vice-Chancellor will not meet with the opposition which has been manifested in some other instances. The step is necessary if the University is to undergo the effective re-organization as a teaching and residential institution which is intended. The work in the first few years will be especially heavy. The University is to gradually take control of Government institutions and those privately managed pro-

vided mutual agreements can be reached. Most of the professors and teachers will become University servants and there will be considerable co-ordination and pooling in teaching now almost entirely lacking. The funds to be contributed by Government will be placed on a definite statutory basis. An important reform held by the Sadler Commission to be the crucial need for effective reorganization is to make the intermediate and not the Matriculation examination the entrance to University classes. The University is to be open to persons of both sexes of all classes and creeds, and there are to be no religious tests for teachers or students. Every student in a constituent college is to reside in a hostel or under such conditions as may be prescribed. A study of the draft leads to the conclusion that the Education Minister is to be congratulated upon the care and sincerity with which he seeks to apply to Madras the sound principles expounded in the Sadler Report.

Impressions of Oxford.

Mr. Stephen Leacock, who combines his role of Professor of Economics in McGill University with that of a humourist of world-wide fame, has recently had some very witty and sarcastic things to say about Oxford University which he visited while in England last year. Writing in the *Morning Post*, he says:—

One searches in vain in the Oxford curriculum for any adequate recognition of the higher and more cultured students. Strange though it seems to us on this side of the Atlantic there are no courses at Oxford in House-keeping, in Salesmanship, or in Advertising, or on comparative Religion, or on the influence of the Press. There are no lectures whatever on Human Behaviour, or Altruism, or Egotism, or on the Play of Wild Animals. Apparently the Oxford student does not learn these things.

This cuts him off from a great deal of the larger culture of our side of the Atlantic. "What are you studying this year?" I once asked a fourth year student at one of our great colleges. "I am electing Salesmanship and Religion," he answered. Here was a young man whose training was destined to turn him into a moral business man; either that or nothing. At Oxford, Salesmanship is not taught and Religion takes the form of the New Testament. The more one looks at these things, the more amazing it becomes that Oxford can produce any results at all.

The effect of the comparison is heightened by the peculiar position occupied at Oxford by the Professor's lectures. In the colleges of Canada and United States, the lectures are supposed to be a really necessary and useful part of a student's training. Again and again I have heard the graduates of my own college assert that they had got as much, or nearly as much, out of the lectures at college as out of athletics, or the Greek Letter Society, or the Banjo and Mandolin club. In short with us the lectures form a real part of the college life.

"PUNK" LECTURES.

At Oxford it is not so. The lectures, I understand, are given, and may even be taken. But they are quite worthless, and are not supposed to have anything much to do with the development of the student's mind. "The lectures here" said a Canadian student to me, "are punk." I appealed to another student to know if this was so. "I don't know whether I would call them exactly punk," he answered,

"but they are certainly rotten." Other judgments were that the lectures were of no importance; that nobody takes them, that they don't matter; that you can take them if you like; that they do you no harm.

It appears further that the Professors are not keen to their lectures. If the lectures are called for they give them; if not, the Professor's feelings are not hurt. He merely waits and rests his brain until in some later year the students call for his lectures. There are men at Oxford who have rested their brains in the way for over thirty years; the accumulated brain power thus dammed up is said to be colossal.

I understand that the key to this mystery is found in the operations of the person called the tutor. It is from him, or rather with him, that the students learn all that they know; one and all are agreed on that. Yet it is a little odd to know just how he does it. "We go to his rooms," said one student, "and he just lights a pipe and talks to us." "We sit round with him," said another "and he simply smokes and talks and goes over our exercises with us." From this and the other evidence I gather that what an Oxford tutor does is to get a little group of students together and smoke at them. Men who have been systematically smoked at for four years turn into ripe scholars. If any one doubts this he can go to Oxford, and he can see the thing actually in operation. A well-smoked man speaks and writes English with a grace that can be acquired in no other way.

VENERABLE PROFESSOR.

In what was said above I seem to have been directing criticism against the Oxford Professors as such; but I have no intention of doing so. For the Oxford Professor and his whole manner of being I have nothing but a profound respect. Here is, indeed, the greatest difference between the modern up-to-date American idea of a Professor and the English type.

Even with us in older days, in the by-gone time when such people as Henry Wadsworth, Longfellow, and William Cullen Bryant were Professors, we had the English idea; a Professor was supposed to be a venerable kind of person, with snow-white whiskers reaching to his stomach. He was expected to move around the campus oblivious of the world around him. If you nodded to him he failed to see you. Of money he knew nothing, of business, far less. He was, as his trustees were proud to say of him, "a child." On the other hand, he contained within him a reservoir of learning of such depth as to be practically bottomless. None of his learning was supposed to be of any material or commercial benefit to anybody. Its use was in saving the soul and enlarging the mind. At the head of such a group of Professors was one whose beard was even whiter and longer, whose absence of mind was still greater, and whose knowledge of money, business and practical affairs was below zero. Him they made the President.

All this is changed in America. A University Professor is now a busy-hustling person, approximating as closely as he can do it to a business man. It is on the business man that he models himself. He has a little place that he calls his "office" with a typewriter machine and a stenographer. Here he sits and dictates letters, beginning after the best business models: "In re. yours of the eighth ult. would say," etc., etc. He writes these letters to students, to his fellow-professors, to the President, indeed, to any people who will let him write to them. The number of letters that he writes each month is duly counted and said to his credit. If he writes enough he will get a reputation

as an "executive" and big things may happen to him. He may even be asked to step out of the college and take a post on an "executive" in a soap company or an advertising firm.

DRIVING SHEEP OVER HURDLES.

The man, in short, is a "hustler", an "advertiser" whose highest aim is to be a "live-wire." If he is not, he will presently be dismissed, or, to use the business term, "let go" by a board of trustees who are themselves hustlers and live-wires. As to the Professor's soul, he no longer needs to think of it, as it has been handed over along with all the others to a Board of Censors.

The American Professor deals with his student according to his lights. It is his business to chase them along over a prescribed ground at a prescribed pace like a fold of sheep. They all go humping together over the hurdles with the Professor chasing them with a series of "tests" and "resitations", "marks" and "attendances", the whole apparatus copied obviously from the time clock of the business man's factory. This process is what is called "showing results." The pace set is necessarily that of the slowest, and results in what I have heard Mr. Edward Beatty describe as the "convoy system of education."

In my opinion, reached after fifty-two years of profound reflection, this system contains in itself the seeds of destruction. It puts a premium on dullness and a penalty on genius. It circumscribes that latitude of mind which is the real spirit of learning. If we persist in it we shall presently find that true learning will fly away from our Universities and will take rest wherever some individual and inquiring mind can mark out a path for itself.

Now the principal reason why I am led to admire Oxford is that the place is little touched by this measuring of "results" and this passion for visible and provable "efficiency." The whole system at Oxford is such as to put a premium on genius and to let mediocrity and dullness go their own way. On the dull student Oxford, after a proper lapse of time, confers a degree which means nothing more than that he lived and breathed at Oxford and kept out of jail. This for many students is as much as society can expect.

GREAT OPPORTUNITIES.

But for the gifted students Oxford offers great opportunities. There is no question of his hanging back till the last sheep has jumped over the fence. He need wait for no one. He may move forward as fast as he likes, following the bent of his genius. If he has any ability in him beyond that of the common head his tutor interested in his studies, will smoke at him till he kindles him into a flame. For the tutor's soul is not harassed by herding dull students with dismissal hanging by a thread over his head in the class-room.

The American Professor has no time to be interested in a clever student. He has time to be interested in his "department," his letter-writing, his executive work, and his organizing ability, and his hope of promotion to a soap factory. But with that his mind is exhausted. The student of genius merely means to him a student who gives no trouble, who passes all his tests and is present at all his "recitations." Such a student, if he can be trained also to be a hustler and an advertiser will undoubtedly "make good." But beyond that the Professor does not think of him. The everlasting principle of equality has inserted itself into a place where it has no right to be and where in equality in the breath of life.

PROFESSORS WORTH HAVING.

American and Canadian college trustees would be

horrified at the notion of Professors who apparently do not work, give few or no lectures and draw their pay merely for existing; but these are really the only kind of Professors worth having; I mean men who can be trusted with a vague general mission in life, with a salary guaranteed at least till their death, and a sphere of duties interested solely to their own conscience and the prompting of their own desires. Such men are rare, but a single one of them when found, is worth ten 'executives' and a dozen 'organizers.'

The excellence of Oxford, then, as I see it, lies in the peculiar vagueness of the organization of its work. It starts from the assumption that the professor is a really learned man whose sole interest lies in his own sphere, and that a student, or at least, the only student with whom the University cares to reckon seriously is a young man who desires to know. This is an ancient mediæval attitude long since buried in more up-to-date places under successive strata of compulsory education, State teaching, the democratization of knowledge and the substitution of the shadow for the substance and the casket for the gem. No doubt, in newer places the thing has got to be so. Higher education in America flourishes chiefly as a qualification for entrance into a money-making profession and not as a thing in itself. But in Oxford one can still see the surviving outlines of a nobler type of structure and a higher inspiration

The University of Nalanda.

All those who know anything about Ancient India must know that the two great Universities of Takshasila and Nalanda were among the greatest glories of our land in the Buddhist age. Unfortunately the information, that is available to us of these Universities is altogether meagre. Prof. Phanindranath Bose, M.A., of the Viswa-Bharathi, Santiniketan, has put together all the known facts about Nalanda in the form of a narrative in a Bengali booklet of less than 50 pages, to which I am indebted for the brief account which follows, writes Mr. Rama Iyer in the *Madras Educational Review*!—

Recent investigations have shown that the site of Nalanda was the present village of Badagaon in the district of Patna. Among the few relics that have been unearthed from this place is the great seal of the University, bearing the inscription, "*Sri Nalanda Mahavihari Arya Bhikshu Sanghasya*." Lord Buddha had, according to legend, chosen this spot in one of his former births for meditation, and even in his last birth he seems to have taught the tenets of his faith in this place. When he attained Nirvana, one of his ardent devotees, a king by name Sakraditya, resolved to perpetuate his memory by founding a monastery in this place. Then, in the time of Asoka, a few learned monks laid the foundation of the University. The University grew into mighty proportions in the course of a few centuries, and students in their hundreds began to flock from far and near. As, under the beneficent influence of Buddhism, caste distinctions were obliterated, and the restrictions on foreign travel disappeared, an active intercourse was set up between India and foreign countries like Tibet, China and Japan. Students and travellers from these remote countries came to Nalanda for study and the collection of Buddhist literature. Fa Hian and Yuan Chwang

were by no means the only visitors from China. Nalanda was at the height of its glory at time of the latter's visit. Many valuable works of literature were carried away to China and Tibet, and translated into the languages of those countries. It is a most curious circumstance that, while most of the originals have perished, their Tibetan and Chinese translations have survived, so that an adequate study of the history of Buddhist India is well-nigh impossible without a knowledge of these languages.

Some idea of the greatness of the University may be had from the fact that, in its best days, it provided accommodation for some ten thousand persons, the monks and students included. Thousands of small rooms, each twelve cubits by eight, were provided for residence, while the classes were held in large lecture-halls. A wide choice of subjects was offered to the students,—Hindu and Buddhist Literature and Philosophy, Medicine, Architecture, and other arts and sciences. There was a magnificent library of palm-leaf and *bhurjapatra* manuscripts, and the art of calligraphy was taught as a special subject, since, in those days, the copying and preserving of manuscripts was an art by itself. The monks of Nalanda were among the best scholars of those times, and scholars from all over the country used to visit the place for the purpose of holding deputations with them, as their approbation was considered the best hall-mark of merit.

Intending students who reached Nalanda at night had to stay in the *Atithi-Sala* or Guest-house outside the main gate, till the next morning. The "keeper of the gate" was invariably a great scholar, as it was his business to examine the students and adjudge their fitness for admission. Those who were tried and found wanting had simply to return the way they came. Admission to the University was based solely on intellectual qualifications; all who satisfied this test were admitted without distinction of caste or creed. The discipline was of a most stringent kind. All tendency to softness or self-indulgence was sternly repressed, as self-control and simplicity were of the essence of monastic life. Early in the morning the monks chanted their favourite invocation to Buddha, and went out to bathe in batches. The whole day was devoted to study and instruction. The meals consisted of rice, camphor, oil and butter, limes, dates, and nutmegs. There were big mango-grooves and gardens, with beautiful lotus ponds, which provided recreation at the close of a busy day.

It goes without saying that the University could not have carried on its work on such a magnificent scale, if it had not been free from all anxieties on the score of finance. Pious benefactions were always forthcoming for the maintenance of the Monastery and the University. Financial stability was ensured, as more than two hundred villages had been given as free gifts by many kings and princes. It is really a wonder that an institution so vast and laid on such stable foundations, should have perished so utterly as to leave no trace even of its library. The decline and fall of Nalanda, as of Takshasila, is still shrouded in mystery.

We have already spoken of the examination for the admission of students. It would be interesting to note the kind of questions that were asked. We shall translate here a specimen question, which Prof. Bose has given, with the answer to the same.

Krishnaraj is asked, "Where do you come from?" He replies, "From Samatata (in Bengal)."

"Oh, you belong to the place of Mahasthavira

Silabhadra? Well, then, let us see what you can tell us of the Mahabhiṣṭhu."

Krishnaraj replies as follows:—"The Mahabhiṣṭhu Silabhadra is the son of the king of Samatata. He showed a passionate love of knowledge from his boyhood. At the age of 30 he came to Nalanda for study. At that time the Bodhistava Dharmapala presided over this institution. Once a world-renowned scholar came to Nalanda to hold a disputation with Dharmapala; but Silabhadra came to the assembly, and volunteered himself to 'dispute' with the man in the place of his master. The man at first refused to cross swords with 'a mere boy,' but at length he was beaten and obliged to beat a hasty retreat. Since that day the fame of Silabhadra's learning has spread all over the world." This answer is found satisfactory, and Krishnaraj is forthwith admitted to the University.

Prof. Bose also describes two great gatherings of the University both presided over by Mahasthavira Silabhadra. The first is the ceremony of Inauguration for the year, in which Silabhadra addresses the monks and students on the value of discipline for the development of self-control, and points out that none but persons of unsullied character are entitled to be members of the Monastery or the University. The second gathering is convened to grant certificates to those students who have completed their course, and who are about to leave Nalanda. Silabhadra avails himself of the occasion to exhort the students to conduct themselves in accordance with the noble teachings of Buddha, wherever their lot may be cast in future years. "Conquer anger by patience, wickedness by good nature, miserliness by generosity, falsehood by truth." "Unrighteousness always meets with destruction, while Righteousness alone leads to salvation." "In conclusion," says Silabhadra, in words of simple dignity, "I exhort you all to do your best to raise the prestige of Nalanda at all times." And so he resumes his seat, and the great gathering disperses with the exclamation from a thousand throats:—"Hail, Nalanda, Hail!"

Topics from the Journals.

(August 1922.)

Tropical Life.—Tinkering Tariffs trouble the Tropics.
Perfumery and Essential Oil Record.—Essential oil from Inehi grass by Messrs. K. L. Moudgill and K. R. Krishna Iyer.

Canadian Forests Magazine.—Some New Methods required for Fighting Forest Fires, by R. S. Griffith.

The Journal of the Ministry of Agriculture.—The future of British Agriculture, by Right Hon'ble Sa Erute, P.C., M.V.O.

Journal of the Indian Industries and Labour.—The Limits of State aid to Industries, by the Hon'ble C. Y. Chintamani. Suggestions regarding the functions of Provincial Departments of Industries by A. Y. G. Campbell, C.I.E., C.B.E., I.C.S.

Dunn's International Review.—From Field to Factory (Cotton Production in Southern U. S. A.), by W. R. Timmons. Concrete as a Building Material, by W. A. Humlin.

Madras Educational Review.—The Message of the Bolpur School, by V. Veeraraghava Iyengar.

(September 1922.)

Tropical Agriculturist.—Coffee Culture, by J. Hagen, Cultivation of Cotton in Ceylon.

Perfumery and Essential Oil Record.—Research of the Properties and Preparation of Dutch East Indies Sandalwood Oil, by Rojdestwensky (translated from *Toysmannia*, 1922, No. 4, 152—175).



Mainly About People.



Rt. Hon'ble Mr. Sastri.

In a reply to a question in the Council of State, the Hon. Mr. B. N. Sarma said;—"The following are the immediate results of Mr. Sastri's mission. The Queensland Government have approved regulations exempting all British subjects of any native race of India who were lawfully domiciled in Queensland at the commencement of the Banana Industry Preservation Act 1921, and who have continuously remained so domiciled from the operation of the Act which made it almost impossible for Indians, unless specially exempted, to engage in the banana industry.

In South Australia, the Government have decided to remove the only disability from which Indians suffer in that colony by amending their Irrigations and Reclaimed Lands Act, 1921, which disqualified all Asiatics from acquiring lands dealt with in the Act and to make it applicable to alien Asiatics only.

The Commonwealth Government have given an assurance that steps will be taken at an early date to enable Indians in Australia to participate in the benefits of old age pensions equally with other citizens in the Commonwealth.

The Universities in Australia, with the exception of the University of Brisbane, in which accommodation is very limited, have expressed their willingness to admit a limited number of Indian students in accordance with their ability to accommodate them and to consider any schemes prepared by the Indian Universities for the interchange of lecturers for short periods.

As regards the franchise, the Governments of the Commonwealth and Western Australia have promised sympathetic consideration, while the State of Queensland, the only other state in which the right is not possessed by Indians, awaits the lead of the Commonwealth Government.

Apart from these achievements, Mr. Sastri has been conspicuously successful in removing ignorance and prejudice concerning Indians, and in creating an atmosphere favourable to their claims.

N. G. Basu, C.I.E.

Rai Bahadur Nitya Gopal Basu, C.I.E., M.A., whose death is reported from Calcutta joined the Bengal service in 1884, and became one of the leading men of the Government of India's Financial Department. He received the C.I.E. in 1910, and later became Accountant-General of Bengal. He retired in 1915.

Sir W. Vincent.

A great Civil Servant is passing from India in Sir William Hoare Vincent, K.C.S.I. The papers gave recently a report of a farewell banquet in his honour at Simla by the non-official members of the Council of State. From a perusal of this account, it will be easy to see with what respect and honour he is regarded by all classes with whom he has come in contact. The words of Sir Dinsha Wacha give also a cogent reply to those who are never tired of gibbing at the Civil Service, and denying that it is of any value to

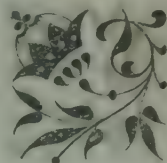
India. Sir William Vincent is the son of a Carnarvon clergyman, and after early education in Wales, went to T.C.D., passing thence to the I.C.S., at the age of twenty-one. His first twenty years' service were spent first in Executive and later in Judicial posts in Bengal. In 1909-10 he officiated as a Puisne Judge of the Calcutta High Court, and afterwards went to Simla as Secretary of the Government of India Legislative Council. In 1916 he performed very useful work on the Committee which enquired into the the Mesopotamia scandal. Since 1918, he has been Home Member of the Viceroy's Cabinet and head of the Central Publicity Bureau. In these appointments his responsible position has been almost the Indian equivalent especially since the advent of the new Councils of the Prime Minister's. He has negotiated many important measures through the Houses, and in spite of controversy has kept the respect and good will of all his fellow legislators. Sir William Vincent married in 1889 Grace, the daughter of the late Mr. W. H. Trotter, and has two daughters of the marriage.

Earl Spencer.

We regret to report the death at the comparatively early age of 65, of the 6th Earl of Spencer, late Lord Chamberlain to His Majesty. The late Peer came of a Whig stock, the first Earl being a grandson of that Earl of Sunderland who was James II's last and William III's first Minister, and who steered England through the troublous days of the Revolution. Practically all the successive holders of the title have held responsible Liberal Ministerial posts, in spite of the great additional responsibility consequent upon their being the owners of almost half the country of Northamptonshire. The third Earl represented the country till he succeeded to the peerage, and was also William IV's Chancellor of the Exchequer, the 4th Earl became Lord Chamberlain and Lord Steward. The fifth Earl, half-brother to the new deceased peer, fulfilled successively the duties of M.P., Viceroy of Ireland, and First Lord of the Admiralty. Excepting possibly the Cecils and the Churchills, no great English family have so long maintained their family traditions. The sixth Earl Spencer, Knight of the Garter, Privy Councillor, G.C.V.O., M.A., Baron Spencer, and Viscount Althorp, was educated at Harrow, and Trinity, Cambridge, and represented various Northamptonshire constituencies in the Commons as a Liberal almost without a break for twenty-five years, when he was created in (1905) Viscount Althorp, and received the appointment of Lord Chamberlain. He succeeded his half-brother twelve years ago. Lord Spencer married the Hon. Margaret Baring, daughter of Lord Revelstoke, and had by her three sons and three daughters. His sister was the first wife of Lord Sandhurst, the present Lord Chamberlain, a foretime Governor of Bombay. One of his daughters married the younger brother of the now Secretary of State, Lord Peel. His eldest son who has succeeded to the title, is a captain in the Life Guards, and married in 1919 Lady Cynthia Hamilton, a daughter of the Duke of Abercorn,



Leaders in Finance and Industries.



CHARACTER SKETCH OF THE MONTH.

Sir Basil Zaharoff.

Strategist in World Finance.

Sir Basil Zaharoff is frequently referred to in leading articles. He is considered to be the richest man of the world and credited with much influence in European political circles. He is also supposed to be behind the Pro-Greek policy of the British Cabinet.

According to the *New York Times*, Sir Basil Zaharoff one of the most mysterious men in the world, has been put into the rank of the richest, Amunitions maker, international banker, owner of steamship lines and part owner of the Casino at Monte Carlo, an undisputed contender for oil rights against such enormous aggregations of capital as the Standard Oil and the Royal Dutch Shell, an unseen power behind more moves than one on the political chess board of Europe, and an energetic philanthropist, a Harounal Rashid for whom half the continent is a Bagdad, he has yet managed to shroud in secrecy much of his life, even the very place and date of his birth.

It was during a debate in the House of Commons on the distribution of honours that Mr. Aubrey Herbert asked whether Sir Basil had been knighted on account of a substantial loan to the British Empire during the war; and why, if that were so, the fact was not stated that he was "reputed to be the richest man in the world."

The subject then under discussion was held up for enquiry by a Royal Commission, and no answer was given to Mr. Herbert. No explanation was forthcoming therefore as to how and why a man so influential in the Councils of European States a cosmopolitan who speaks half a dozen languages and owns as many homes and estates in various countries credited with having financed Greece in the last Balkan war and assuredly of fabulous wealth, could have remained practically unknown to the public.

FRENCH AND BRITISH HONOURS.

The French Government made Zaharoff a Commander of the Legion of Honour, in 1914. It was not until 1918 that the Grand Cross of the Order was conferred upon him. The British have honoured him with the Knight Grand Cross of the British Empire and the Knight Grand Cross of the Order of Bath; and Orford has made him an honorary Doctor of Civil Laws. He has, moreover, been recognized as the intimate of Lloyd George of Venizelos of Clemenceau, Briand and of other powers in Europe, and he has been admitted to the guarded circles of exclusive Marlborough Club. More than once his large benefactions have drawn momentary attention to him and on several occasions his name has come up in French and English legislative halls. Never but once so far as is known has he made a public statement. Continually he has moved behind a screen.

This man, tall, slender and of distinguished manner with iron gray hair and a silvery mustache and imperial wearing invariably a red carnation in his buttonhole—at 72 a bachelor and a reputed woman hater, an im-

pulsive philanthropist whose cheque for half a million francs lay for months in a French official's desk, on the supposition that it had been offered by a harmless crank; a welcome guest in the inner circles of half a dozen Continental capitals; a strategist in world finance and politics: such a figure, you will agree, might well inflame a romancer.

And in all probability there has been some romancing about Sir Basil. The mystery with which he has sought to surround himself has invited that. What is to be set down here has been gathered by European newspaper men and from other sources believed to be reliable. As nearly as many facts will be presented, but the writer cannot refrain from repeating at the outset a story which, even if it were to prove to be apocryphal (it comes from an excellent source) is yet too interesting to be withheld any longer.

NARROW ESCAPE FROM GERMANS.

From the outset of the World War, so the story goes, the Germans regarded the capture of Zaharoff as of extreme importance. It is even said that a price was put upon his head and that when German armies first overran France he escaped from one gate of the park surrounding his chateau near Pantoise once a gift from Leopold of Belgium to the Baronne de Vaeghn while the uhlans were dashing in at another. But the incident I had in mind concerns a journey he made on a neutral ship which was overhauled by a U boat.

A boarding detachment from the submarine made a thorough search of the ship, and in Zaharoff's cabin found a man hiding under the bank. Quickly a sack was thrown over his head, he was bound hand and foot and thus securely trusted, was borne in triumph to the U boat.

The captain of the raided ship was amazed a few hours later to find Sir Basil standing beside him.

I thought they got you, he gasped.

"Oh, no," was the reply; "I was in a sailor's locker. But I am afraid they have taken my secretary. He was a most efficient young man. He had been invaluable."

Sir Basil was frowning into the distance. The Captain did not press the matter further.

According to one French newspaper Sir Basil's full name is Zacharie Basil Zaharoff. According to *Le Journal des Hellenes* he was born in Constantinople (Tatavia) in a fashionable Greek district; but other reports have it that he was born in Athens, and still others in Russia or in London. That his father was Russian and his mother Greek, all the report seem to agree; and further that he is naturalized Frenchman, although educated principally in England. It is agreed, too, that his parents were poor, but reports vary as to whether he started his career in Paris with a stake of 5 francs, or in the Krupp plant in Germany

as a labourer, or as an employee in the Vickers Maxim plant in England, of which he is now the head.

There are rumours that Zaharoff made and lost two fortunes during an adventurous and turbulent young manhood—just the sort of rumours one might expect to hear of such a figure. As a matter of fact, all his earlier life is shadowed. At the outbreak of the war he was a rich man in all probability, an extremely rich man—but it was not until after the war that the public began now and then, to hear vaguely about him. Probably munitions multiplied his fortune during the war.

FAR-FLUNG FINANCIAL INTERESTS.

According to *Le Journal des Hellenes* Sir Basil is a Director of the Credit Lyonnais and one of the largest depositors in the Banque de France; a councillor of the Societe Universelle du Nickel, founded by the Rothschilds; a Director of the Barclay Bank in London, stockholder in numerous steamship lines, grain, elevators and theatres, the owner of vast properties in the Near East, and half owner of the Monte Carlo Casino, aside from his important munitions interests. It seems certain that he was back of the formation, in 1920, of an Anglo-French oil group, as he had been the mainspring in the Anglo-Persian group a short while before; and that he is the energizing power behind the construction of huge storage plants and refineries in French ports, to be used in competition with the Dutch shell and Standard Oil groups.

Sir Basil's special interest in the Near East is explained in some quarters on the ground of his great fondness for the land of his mother's birth. His gifts to Greece have been munificent. During the Balkan war he is said to have made the nation an allowance of 20,500,000 a year and during the World War of half that sum; and he is known to have donated a huge radio station at Venice costing \$500,000. He paid for new legations, in European capitals, lest his beloved motherland seem shabby to strangers, and provides for their up-keep. He is credited with having financed the rise of Venizelos to power, and to have assisted him more than once in crisis during the World War.

After the Greek throne was left vacant by the death from a monkey bite of King Alexander, a report be-

came current in Paris that Prince Sixte of Bourbon Parma was a candidate for the throne. The story went that he had appealed to Edmund and Camille Blanc, who are connected with the Bourdon Parmas through the Radziwills, and who are members of one of the wealthy French banking families, to influence Zaharoff in his behalf, knowing very well he couldn't have the throne without Sir Basil's approval. Camille Blanc is part owner of the Monte Carlo Casino, and Zaharoff maintains a home at the Hotel de Paris in the Monaco resort. The story is that the matter was taken up there, but that Camille Blanc made it a condition (to which the prince offered no objection) that he, (M. Blanc) should be permitted to establish a licensed gaming house in Athens if he won Zaharoff's support.

"One Monte Carlo," Sir Basil is said to have observed when the details of the plan became apparent under his questioning "is quite enough for the world."

MUNIFICENT GIFTS.

After a reference to an attack on Sir Basil in the House of Commons last year by Lieutenant Colonel Walter Gunners and Mr. Aubrey Herbert in connection with his alleged influence on Britain's foreign policy and to his munificent gifts to education in charity in France and England the *New York Times* goes on:—

"After all is said that can be said not much has been told of this modern Croesus and International politician. Is he a poseur? Or is there something he so wishes to keep hidden that he thinks safety lies in hiding much more? About his being the richest man in the world doubt may well arise; but about his power there can be no question. Hugo Stinnes, Germany's post-war prodigy, becomes insignificant beside this veiled titan of finance and international intrigue—or if you will, statecraft. As I glance back over what has been set down here, I am almost tempted sceptically to lay it aside as a hoax, the gay imaginings over their wine of a group of European newspaper correspondents. But there can be no myth about it. Against such a theory there stands the scant but solid twelve lines in the British. "Who's Who," setting forth, with taciturn economy, the recent distinctions and achievements (so far as he cares to have them known) of Sir Basil Zaharoff."

Electricity in Farming.

That in the future, for the most successful operation of farms, the use of electricity will be essential from the points of view both of cutting down the total costs of power and labour and of obtaining an increased output was the contention put forward by Mr. R. Borlase Matthews in a paper on "Electro-farming" read before the Institution of Electrical Engineers.

For some time past he has been carrying out experimental investigations, on commercial rather than laboratory lines, on his 600-acre farm near East Grinstead, and he gave long lists of the uses to which electricity can be put not only in the farm-house, but in the farm buildings, on the farm land, and in connexion with the treatment of gathered crops. Electrical methods of performing such operations as ploughing, cultivating, harrowing, rolling, hoeing, reaping and gathering, he declared, have now passed the experimental stage, and are about to be introduced commercially on the sound basis that it will pay the farmer to adopt them.

Although, even under the best conditions, the load factor of an individual arable field is low, the completely electrically-equipped farm has a load factor which is quite satisfactory from the central station

point of view, especially when considered in conjunction with neighbouring farms. It is to be hoped, however, that supply undertakings will not stipulate for rates based on the horse-power of the motors connected. Such rates discourage a farmer from installing a number of motors—in America, in certain districts where such rates are charged, farmers are installing oil engines to reduce the number of their motors—and a restricted maximum demand basis is preferable, as it encourages the extended use of electricity.

As the outcome of experience practice in distribution for agricultural purposes in settling down to a simple standard. While the main distribution may be at any pressure over 50,000 volts, in Europe a sub-distribution at 10,000 volts, three phase 50 periods, is becoming standard, the final pressure for farm supply being 380 volts for three-phase motors and for lighting 220 volts single phase, obtained between any phase and a neutral conductor. In such a case the lines consist of four wires, the of urther neutral wire acting as a guard. At road crossings tall iron lattice standards are employed, at such a height that if a wire gives way at either support it will not come in contact with ordinary traffic.



Books in Brief.



SHORT REVIEWS OF RECENT BOOKS.

An Introduction to Co-operation in India.

By C. P. Strickland, I.C.S., published by the Oxford University Press, Bombay and London.

This is a short book of 75 pp. crown 8vo. and is the first of the series "India of To-day" projected by Mr. Humphrey Milford for popular circulation in India. As may be expected first half of the book is devoted by way of introduction to topics like "The Economic Problem," "The Co-operative Solution," "The Example of England" and "The Example of Italy." The co-operative movement in India is dealt with in 10 pp. and in the remaining 24 pp. the subjects of "Credit Society," "Societies of Consumption and Supply," "Societies of Production and Sale" and "other forms of co-operation" are treated of. We would add that the treatment of the subject is simple and direct to a degree. Mr. Strickland wishes with obvious care and with a sense of responsibility that is impressive. We do not think that a better book could be recommended for one who wants an introduction to co-operation in India.

Mineral Deposits of Gwalior.

We are in receipt of a series of 16 pamphlets from the Director, Departments of Mines and Geology, containing extracts from important reports of experts in Mining and Geology, who have explored the Gwalior State in the past on behalf of the Government; the most important reports being those made by Mr. H. C. Jones of the Geological Survey of India, and Prof. W. R. Dunstan of the Imperial Institute, London. The series contains the following pamphlets:—1. Iron, 2. Manganese, 3. Sulphides of Metals, Galena, copper and Iron Pyrites, 4. Gold, 5. Monazite, Tinstone and Cinnabar, 6. Garnets, 7. Clays, 8. Cement-making materials, 9. Pottery clays, 10. Calcite and Celadonite, 11. Ochres, 12. Mica, 13. Panna Diamond bearing Shales, 14. Quartz and Quartzite, 15. Building materials, 16. Alkalis, Sodium Carbonates.

A perusal of the pamphlets shows that Gwalior is endowed with a variety of important mineral deposits which are awaiting development by private enterprise. We hope that as a result of further work on these deposits Gwalior will become an important mineral-producing State in India. Some of its mineral deposits, such as those of cement making materials and pottery clays, have already proved as great assets in the establishment of local industries on a large scale. The rich deposits of iron ore also hold out a very bright promise of establishing another very important industry in the State. Other deposits, such as those of galena, iron pyrites and mica deserve the attention of the public. The Gwalior Government deserves to be congratulated on its efforts to draw the attention of the public to the important subject of mineral development which plays such an important part in the advance of civilization. The pamphlets can be had from the office of the Director of Mines and Geology, Moti Mahal, at a nominal price of 8 annas each.

Indian Export Trade.

By R. M. Joshi, M.A., LL.B., B.Sc., (Econ.), Professor of Indian Economics, Sydenham College of Commerce and Economics, Bombay, Price Rs. 3—8—0, published by the author.

This is a critical analysis of the Indian Export Trade between 1900 and 1914, indicating its general trend in almost every aspect. A book that should prove of the highest value to industrialists in India. The book is fully illustrated, the diagrams and tables of statistics being interspersed throughout the book. The concluding chapter is specially noteworthy inasmuch as it contains the author's deductions—to this we invite particular attention.

The Hindu Religious Year.

By M. M. Underhill, B. Litt., Association Press, (Y. M. C. A.), 8, Russel Street, Calcutta.

We have read this book with great interest. Though it deals with the Hindu year, it has many items of note on the festivals relating to it. The information is mainly based on the information gleaned in Maharashtra. The point worthy of remark is that Mr. Underhill makes these festivals field to the higher purpose he has in view to link them up with origins—Sun worship, Moon worship, Planet worship. A book dealing more comprehensively with the whole of India is made a desideratum by a study of this book. Mr. Underhill has paved the way for *his* (let us say) his future *magnum opus*.

India in 1921-22

By Professor R. W. Reading, Superintendent, Government Printing, India, Price Rs. 1—8—0.

The annual report on the progress and condition of India is a compact volume of 368 pages including appendices and index bearing the title *India in 1921-22*. It comprises a complete survey of the salient features, political, economic and social of Indian life during the year under review. Of its seven narrative chapters the first deals with India's world position and includes accounts of relations with the Bolsheviks, Afghanistan and a survey of the frontier affairs. It refers also to the problems of army administration to the Moplah disturbances and to the relations between India and the rest of the Empire including the position of Indians abroad. Chapters 2, 3 and 4 are devoted to a full account of the non-co-operation movement from its first inception to the arrest of Mr. Gandhi. They include a summary account of the royal tour and its consequences. The fifth chapter deals with the economic conditions of India, finance, trade, agriculture, industries, communications, irrigation and the like. Chapter 6 entitled 'The people and their problems' is perhaps the most interesting in the book dealing as it does with the well-being of the classes and the masses, labour problems, sanitation, drink and drugs, social and educational reforms. The last chapter treats of certain problems of Government under the reforms and includes a summary of the work achieved by the new legislatures, central and provincial.

The Industrial Year Book 1922.

Edited by Philip Gee, 40, King Street, Covent Garden, London, W.C. 2.

This is an excellent publication on current industrial topics with papers and notes by first class writers of note like the Rt. Hon'ble Sir Robert Horne, M.P., Chancellor of the Exchequer, the Rt. Hon'ble T. J. Macnamara, M. P., Minister for Labour, Viscount Burnham, the Rt. Hon'ble J.H. Whitley, M.P., Speaker of the House of Commons, Col. O. C. Armstrong, President of the Federation of British Industries, Evan Williams, President of the Mining Association of Great Britain, Harold Cox, W. T. Layton, Director of the National Federation of Iron and Steel Manufacturers, Albert Thomas of the International Labour office, Geneva, J. M. Blanch Edward Luboff and others. The interest of the volume consists in its comprehensive and up-to-date character. It is a mine of valuable information difficult to get from other sources. Mr. Gee deserves to be complimented on the eminently satisfactory character of his publication. It deserves to be in every Library of note in this country. Publicists and public men of every grade should possess a copy of it, if they wish to do their work with anything like intelligent appreciation of the results attained and in the special branches of industry they may be interested in.

Oil Encyclopædia.

By Marcel Nityakis, published by Messrs. Chapman and Hall, Ltd., 11, Henrietta Street, London, W.C. 2. Price 21s. net.

This is a truly comprehensive compilation on Petroleum deserving the highest purpose that can be bestowed on it for its accuracy and information. This alphabetical plan has been adopted and it includes both countries and details about the oil, its distribution mining, etc., etc. A book that should be in every reference Library in this country.

Indian Timbers and their Uses.

More than 40 years have passed since Mr. J. S. Gamble of the Indian Forest Service, published in Calcutta "A Manual of Indian Timbers" and 20 years since a new and revised edition was issued in London. The publication of a reprint, with corrections and additions, of this standard work (London: Sampson Low, Marston & Co., £3 3s.), is an event of importance to the timber trade. Mr. Gamble is to be heartily congratulated on this acceptable celebration of half a century's distinguished association with Indian forestry.

This "Account of the Growth, Distribution and Uses of the Trees and Shrubs of India and Ceylon, with descriptions of their Wood-Structure," in amplified and corrected form, comes at an appropriate time in the history of the Indian timber trade. The export trade, much dislocated by the war, was almost entirely confined to teak and sandal wood until recently. In the conservation and working of the forests, 100,000 square miles of which are under regular management by the Forest Department, the Indian Government possesses a most valuable asset. In the extension of the range of exports little progress had been made until the appointment of Messrs. Howard as agents for the Government of India and the Provincial Governments in connexion with the sale of Indian timbers and articles made from them in this country. There are nearly 2,500 different species of timber trees to be found within the Indian Empire, and though the proportion which is of economic interest is relatively small, it is much larger than the narrow range of the trade in the past would suggest. Substantial progress has been made in the last two or three years in the utilization for panelling, furnishing, fittings, and

decorative work in laurel wood, *padak*, *koko*, silver greywood, white mahogany, *gurjan*, and rosewood from India, but there is reason to believe that we are only at the beginning of resort to the Indian forests for timbers hitherto unused in this country.

The Manual has the merits of completeness and exactitude. The indices to European, scientific, and vernacular names, and to numbers of wood specimens cover nearly 100 closely printed pages. There are two new appendices. The first gives annotated descriptions of wood specimens received since the publication of the second edition in 1902 and the second describes a collection of specimens of Assam woods supplied in 1921. The great value of the Manual would have been enhanced if the general map of India had been replaced by a map of the forest areas based on that which is given in the quinquennial reviews. It is also to be regretted that Mr. Gamble does not furnish a new introduction to the revised reprint briefly indicating the scientific and economic progress since he wrote his introduction to the second edition 20 years ago. Yet these are small defects in so well planned and invaluable a monument to exact aboriginal research.

The first Report of the Adhesives Research Committee embodies the results of certain of the investigations initiated by the Adhesives Committee of the Conjoint Board of Scientific Societies and also the researches of a more fundamental character which have been undertaken by the Adhesives Research Committee of the Department of Scientific and Industrial Research, London. The report is thus a comprehensive summary of the work from its inception in 1918 up to the end of 1921. It is illustrated by diagrams and photographic plates, and its contents are arranged under the following headings:—(i) Introduction; (ii) Mechanical Tests of Adhesives for Timber; (iii) Casein Adhesives; (iv) Gelatin Adhesives; (v) Vegetable Adhesives; (vi) Other Adhesives; Appendix I: Descriptive Bibliography of Gelatin; Appendix II: The Bearing of Results obtained in recent investigations of Soap Systems upon the Structure of Gelatin Gels. Copies of the Report may be obtained from H. M. Stationery Office, Imperial House, Kingsway, London, W.C.2 (price 4s. 3d. each, post free).

A Committee on Gauging Rivers and Tidal Currents was appointed by the Department of Scientific and Industrial Research, London, to collect information relating to methods and appliances used in investigations bearing upon measurements of river, tidal and other currents and to the testing and standardization of such apparatus, and to test appliances that appear to be suitable for use in the study of the water power resources of the United Kingdom. Under the direction of this Committee a report, which is accompanied by a brief bibliography of the literature dealing with current metres, has been prepared by Dr. M. A. Hogan, which summarizes the information available as to the conditions affecting the design and use of current metres, and gives a description of the types now in use. A copy of the Report is obtainable from H. M. Stationery Office, Imperial House, Kingsway, London, W.C.2, price 1s. 8d. post free.

Owing to a slight inconvenience in the Mond Room of our Printers, we have had to issue the last two issues of this Journal as double numbers. Our printers assure us that they are taking the necessary steps to issue the Journal regularly in future. With their co-operation, we hope to issue the December number in advance of that month.

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Industries in Baroda 1920-21.

By "Viator"

The Report of the Department of Commerce and Industry in Baroda for 1920-21 shows the progress the Baroda Darbar is making in its intensive campaign for the development of industries in the State. During the year, loans to the total amount of Rs. 24½ lakhs were granted to two cement companies, a spinning and weaving factory, and an oil and chemical works, eight applications for various concessions, such as the supply of water at favourable rates, the provision of railway sidings and the construction of a road to connect a factory with the main public road were sanctioned and steps were taken to acquire land under the Land Acquisition Act for four industrial concerns. The Report raises the old question how far Government is justified in going in its efforts to promote industrial development. India has advanced a long way from the stage at which Lord Morley held that it was justified in going no distance at all. There are few now who would dissent from the view that, in the peculiar conditions of this country, Government must pioneer in some directions but we have grave doubts whether even the most convinced upholders of Government activity would hold that the Baroda Darbar is not proceeding further and faster than is desirable. The small concessions we have mentioned above are no great matter. The compulsory acquisition of land for industrial enterprises opens up a more debatable question. But it is the grant of loans on such an extensive scale, having regard to the resources of even so prosperous a State as Baroda, which arouses misgivings. There is certainly nothing of a pioneer enterprise about a cotton mill or a cement works and it would have been interesting to know the reasons which were held to make the grant of loans to these concerns desirable. Baroda

seems likely before long to suffer from a plethora of cotton mills. Six were promoted during the year under review and ten in the previous year. Of the latter, the Director of Commerce and Industry reports that nine are making fair progress, buildings being under construction in all cases and all but one having placed orders for machinery. He is, in our opinion, very optimistic for, as many shareholders in concerns promoted during the boom period know to their cost, there is all the difference in the world between placing orders for machinery and getting it and between getting machinery and running it at a profit. It is worthy of mention that, when all the mills are completed, Baroda will have 3,862 looms and 2,23,205 spindles against 721 looms and 53,456 spindles in the four mills working at present.

The Baroda Darbar, at any rate, appears thoroughly satisfied with what has been accomplished. But, with the best will in the world, it is difficult for a reader who has no connexion of any kind with Baroda to discover the grounds for this satisfaction. The Report seems to us to chronicle a lengthy list of failures. We are told that "no progress was made for the proposed factory to manufacture solid extracts as also for the China clay refinery!" Several dairy companies were promoted but all except one have already expired of inanition. An instructive example of how not to do things is furnished by the history of the proposal to start a sugar factory at Vyara, which was selected by the experts attached to the Tata Sugar Corporation as a suitable location for a factory as the soil was considered suitable and cane was already grown on a small scale. It was, however, discovered that there was very little unoccupied land available and that expropriation was out of the question. A

scheme was thereupon drawn up under which the factory would secure a steady supply of cane from the cultivators to whom it was submitted for consideration. But the scheme depended for its success on the provision of irrigation from the Zankri irrigation project which has yet to be developed and it had, therefore, to be kept in abeyance. Meanwhile the Tata Sugar Corporation has been wound up and all the work done has been wasted. Matters should surely never have been allowed to get as far as this. It should have been known at the outset that there was no unoccupied land to be got at Vyara and that cane could not be grown there without irrigation.

In investigating new industries, a Government Department can only proceed on the principle that one hit may compensate for many misses. The misses are all too apparent in the Baroda Report, the hits have yet to be made. A proposal was made that a Fermentation Expert should be engaged with a view to the improvement of the working of the Alembic Chemical Works but the factory declined to meet the Rs. 30,000 this involved and nothing was done. A project was mooted for starting a plate glass factory at Baroda but the testing in London of samples of sand and sandstone showed that these were unsuitable for glass making and further enquiry was dropped. Samples of tobacco leaf were sent to the cigarette factory at Gandevi for trial but the results have not been promising. The percentage of soda in the alkaline waters in the Kadi district is too small to make it a profitable proposition to work the deposits commercially. The expert appointed to investigate the possibilities of manufacturing casein and lactose has reported that the local dairy industry is too scattered to enable a factory to be run successfully. So much for the misses. Possibly hits may result from the negotiations which were conducted

with the Western India Industrial Syndicate during the year in regard to concessions for wood distillation, from the discovery of calcite and bauxite at Nani Naroli and from the drilling operations for natural gas at Jagatia.

The Baroda Department of Industries is acting wisely in its efforts to promote a fish canning industry, but it would hardly seem that the experience available in other parts of India has been utilized as fully as it should have been. Great difficulty was experienced in securing suitable material for tins and, in the end, only seven hundred tins of pomfret, fish roe, cod and Bombay duck were prepared. The work will have to be carried out on a far larger scale before any conclusions of value one way or the other can be drawn.

In its review of the Report, the Baroda Darbar lays down that, as in Japan, the policy of the Department of Industries should be to collect information on the material resources available for a particular industry, the possibility of its development in a particular place, the advantages and disadvantages of the situation, the condition of labour, the facilities for transport and the demand for particular commodities in outside markets and to publish this in the form of literature among the people concerned. This is sound enough and we trust that the Darbar will have no occasion to regret the more active participation in industrial development indicated in the Report. We are old fashioned enough to hold the view that, only in very special cases, is the State justified in going beyond the provision of the fullest information and that there are great dangers involved when it becomes an active partner in industrial enterprise. The Report of the Baroda Department of Industries in, say, five years' time should go far to show whether this is a correct view or not.

Artificial Silk in Italy.

The Italian artificial silk industry, says an *American Consular Report*, has attained a considerable development both as regards capital invested, labour employed, raw material and actual production. The industry is a comparatively new one, being known in the world's markets for only 30 years and in Italy for about 15. It produces by means of four diverse systems a fibre from wood pulp, having a certain external likeness to natural silk and considerable affinity to mercerised cotton. The present amount of capital involved is about 420,000,000 lire,

and by the end of 1923 it is estimated that the amount will be fully double the above figure. Twelve thousand workmen are now employed and by the close of 1923 it is estimated that the number will be about 20,000. Some of the raw materials used, i.e., soda, carbon bisulphide, sulphuric acid are produced by native industries, and it is hoped that after a time the wood pulp may be also, though at present it is imported principally from Scandinavia. Considerable quantities of cloth, hosiery and knitted goods are being manufactured from the fibre,

Reparations and International Debts.*

By the Right Hon. R. McKenna.

Let me begin with an explanation of my choice of subject. I thought at first that some professional topic should be selected, but I soon came across a serious difficulty. There is a much greater difference between the law and practice of banking in America and England than is generally supposed, and I felt that I should be liable to be misunderstood unless this difference were constantly borne in mind.

I resolved therefore to pass over professional banking topics and to look for a subject of a general interest to the business community. What should this be? In their report to the Reparation Commission the Bankers' Committee which sat early this summer in Paris laid stress upon the need to resume normal trade conditions between countries and to stabilize exchanges; and they came to the conclusion that neither of these aims could be accomplished without a definite settlement of the reparation and other international debts. Here then it seemed to me I was a subject for my address. There will be general agreement that there is no matter of more deep concern to the world's trade at the present time than reparation payments and international debts, and I trust therefore you will not deem it out of place that I have chosen this subject for discussion to-day.

There are two preliminary observations which I must make. The first is that I speak as a Banker expressing my personal views. I have nothing to do with politics and I do not appear here in any representative character. I approach the question solely from the economic point of view and my endeavour is to determine so far as I can the limit of the debtors' capacity to pay, and the effect of payment upon the world's trade. Our duty is to satisfy ourselves on the financial possibilities of the case. It is not what the debtors may justly be called upon to pay, but what they are able to pay, which we as business men, anxious to discover the conditions upon which trade prosperity is founded, must consider with the most careful attention.

My second observation is to meet a possible criticism. How can I, a member of a nation which is one of the debtors of the United States,

speak freely to an American audience upon international indebtedness? The primary and essential duty of a debtor is to discharge his liability, and, until this is done, all observations on the origin of the debt and on the economic consequences of international payments are liable to be viewed with suspicion. A creditor may, if he like, open up questions of that kind, but a debtor should admit his obligation without further discussion. I recognize that these are objections which I must answer and I believe that I can do so conclusively. In the course of my argument I shall show that England has the ability to pay, and, once that is established, I can unhesitatingly assert her determination to honour her bond in full. I believe I am justified in asking you to treat England's debt to the United States as certain to be provided for, and, if this be conceded, we shall be free to consider the question of the remaining international debts as one in which America and England are equally concerned and in which both have the same interest as creditors.

First let us look at the magnitude of these international debts. The greatest of all is that of Germany for reparations, a debt of which the United States declined to receive any share. The amount was not defined by the Treaty of Versailles, but subsequently by the London Ultimatum it was put at 32 billion dollars, at which amount it stands nominally to-day. Of the remaining debts the liability of France to the United States and Great Britain is 6½ billion dollars, and of Italy to the same two countries 4½ billion dollars. Russia owes these countries 3½ billion dollars and a further 1 billion dollars to France. These are the principal debts; the others are all comparatively small in amount. Of the creditors of the European Continental Governments England is the greatest.

We have no record in history of international claims of this magnitude. The indemnity exacted by Germany from France under the Treaty of Frankfurt in 1871, in round figures 1 billion dollars, created the largest debt between Governments ever known until the recent war, and is the only precedent we have of a considerable international payment. It is of interest to recall how the liability was discharged. Payment of 150 million dollars was made in gold and silver coin and in German bank notes and currency collected in France, and the

* Part of an Address delivered by the Right Hon. R. McKenna, Chairman of the London Joint City and Midland Bank Limited, at the American Bankers Association Convention, New York City, October 4, 1922.

balance in foreign bills, chiefly German currency bills. The precise form in which the payment was made is however comparatively unimportant. For our present purpose the significant question is how France procured the means of payment. She was bound to acquire German marks or foreign currency exchangeable for marks, and to do so she had either to find German or other foreign buyers for such things as she had to sell or to obtain foreign subscriptions to her loans. Very considerable sales were made of foreign securities owned by French nationals, the French loans were largely subscribed externally, and the export of French goods was so much increased that an average excess of imports of 65 million dollars a year in the four years 1868—1871 was converted into an average excess of exports of 46 million dollars a year in the four subsequent years. By September 1873 the whole indemnity was paid, and although France remained liable for the loans she had issued, she was clear of any direct debt to the German Government, and indeed of all foreign debt payable in any but her own currency.

Here we have an example of a very considerable international debt rapidly paid off without any serious disorganization of the world's trade. Now what were the conditions which made this possible? The war had been short, and the amount of the indemnity was well within the capacity of France to pay. Her nationals held large blocks of foreign securities, which were realizable in foreign markets; her credit was good, which enabled her to obtain foreign subscriptions to her loans; and in her effort to increase her exports she was not hampered by high tariffs. She was not driven off the gold standard and, although there was some decline in the value of the franc, the depreciation never exceeded 5 per cent and, taking the whole period through, amounted to barely more than 1 per cent. But of the several factors in the French ability to pay the most important lay in her accumulated reserve of wealth, the foreign securities owned by her nationals.

Such is the only precedent we have for the payment of a great international debt. The figures we have to deal with to-day are on a far larger scale than the indemnity exacted from France fifty years ago, but the problem in all essential particulars is the same. We have to discover the capacity of the debtors to pay and to consider the consequences of payment. As the indemnity demanded from Germany is much the greatest of the debts

and is the one most urgently in need of a satisfactory settlement I place it in the front of our discussion.

The first question is, what is Germany's capacity to pay? You are perhaps expecting that I am about to give you an inventory of Germany's natural resources and an estimate of her productive power. All this has been done many times and much industry has been displayed in the enquiry. I have no doubt that the experts who advised the signatories of the Treaty of Versailles that Germany could pay 120 billion dollars had made many careful calculations of this kind. But what we have to investigate is not Germany's capacity to produce wealth but her capacity to pay foreign debt. I cannot help thinking that we have here the source of the error into which the Versailles experts seem to have fallen. Nobody has ever doubted Germany's immense power to produce, but production by itself is not enough. She must find a market for her exports, and the problem thus becomes one of determining the possible extension of German export trade. Nor is this the end. We must remember that an increase in her exports will only provide funds for reparations if there is no corresponding increase in imports. Payment for her indispensable imports must be the first charge upon the proceeds of her foreign sales, and it is only the balance, the exportable surplus, which is available for reparations.

In speaking of a nation's exportable surplus we must not forget that other factors may contribute to it besides the balance of exports over imports. Interest received from foreign investments and payment for external services, such as shipping, may be contributory factors. Before the War Germany possessed a very considerable exportable surplus derived from all three sources, but mainly from the interest on her foreign investments which were probably worth not less than 5½ billion dollars. As regards the surplus from the sale of her products and payment for services it is safe to say that it never exceeded 100 million dollars a year. But what is her position to-day? Most of her foreign investments have gone. Some were sold during the War, others have been seized as enemy property by the Governments of the Allied and Associated Powers, and most of what remain have lost their value as in the case of the Russian investments. Her shipping has been largely confiscated and she has been deprived of some of her most productive areas—Alsace-Lorraine, the Saar Basin, and the Polish provinces. All the

sources whence an exportable surplus might have been drawn have been greatly impaired if not wholly destroyed. At no time was Germany's exportable surplus sufficient to enable her to make the annual payments demanded under the London Ultimatum: it is entirely out of the question that she could do so to-day.

But let us get a little nearer to the problem of Germany's present capacity to pay from the surplus sale of her production. According to a recent statement by the Chancellor of the Exchequer in the House of Commons she has paid money and delivered property altogether to the value of about 2 billion dollars. Of this amount 1,645 million dollars represented the value of ships, coal, other payments in kind, property in ceded territories and local payments to Armies of Occupation. The amount in cash has been only 375 million dollars. And yet, with this comparatively small cash payment, observe what has happened. The mark has declined to less than one-seventieth of the value it had when the obligation to pay was imposed upon Germany by the Treaty of Versailles. The means of payment has been found by the sale of marks. After this experience it is difficult to believe that Germany has any surplus at the present time from the export of her products.

There is a further consideration in support of this conclusion. It is beyond question that in the last three years Germany has made every effort to develop her external trade. The German workman, whose industry and efficiency are generally admitted, has been fully employed and the factories have been actively at work all over the country. The decline in the mark, which at every stage has been much greater in the external than in the internal value, has afforded a very considerable advantage to the German exporter, so much so indeed that there is hardly anywhere a manufacturer, producing goods for export, who does not complain of German competition. Nevertheless the German trade figures show that the exports, long after the immediate deficiency in essential foreign commodities due to the War was made good, are still barely equal to the imports. The conclusion seems irresistible that Germany has no present capacity to obtain a surplus from the export of goods.

I am not sanguine enough to believe that those who think they can extract from Germany enough money to enable them to meet the internal liabilities, which they themselves

have incurred in restoring devastated areas, will be satisfied with the statement I have just made. At the recent Reparation Conference of the Allied Powers held in London proposals were made of punitive measures to be taken with the object of compelling Germany to make immediate cash payments, a policy which could only have been advanced under the conviction that Germany really could pay. For my part I do not believe that it is within her power to do so, but let us suppose for a moment that she can. We have then to consider what the effect of this enforced payment would be upon international trade, and whether it would be to the advantage either of Germany's creditors as a whole or of the rest of the world.

If Germany could pay what is demanded of her, the only method of obtaining the money would be by increasing her exports. Now what are these exports to be? She is essentially a manufacturing nation. Her foreign sale of raw materials is comparatively small. On balance she is obliged to import food, and in consequence of the loss of a large part of her mineral lands she is compelled to import both iron ore and coal for the supply of her factories and furnaces. An increased exportable surplus could only be obtained by extending her sale of manufactured goods. To do this in the teeth of the competition of other manufacturing nations she must work longer hours for less wages, she must cut profits, she must reduce her imports to the indispensable minimum. But her competitors will not consent to stand idle while they lose their trade. They will find themselves faced with growing unemployment and heavy trade losses. So far as German goods seek to invade their own domestic markets they may endeavour to exclude them by tariffs, but in order to retain their hold on neutral markets they too will be compelled to reduce wages and cut profits. And thus Germany's effort to extend her foreign trade must be confronted with the opposition of the whole manufacturing interest of the rest of the world, and could only be successfully countered by a general lowering of the standard of life.

I know it is frequently alleged that the collapse of the mark with the accompanying disorganization of the world's trade might have been avoided if the German Government had acted with firmness and good faith. It is said that Germany has intentionally depreciated her currency in order to induce her creditors to abandon their claims. We are

told that her people are not adequately taxed, and that, if they were subject to the burdens borne in some other countries, the Government would be able to meet its liabilities. It is certainly true that in my own country far heavier taxation is levied than in Germany, but I am inclined to think we are overtaxed and that overtaxation so far from fostering cannot fail to depress national production. But whether I am right or wrong in that opinion I fail to see how additional taxation can stimulate foreign trade and provide a larger exportable surplus. The taxes would be paid in marks, and whether the marks are derived from avowed taxation or from concealed taxation through the use of the printing press, they are in neither case a currency which would be accepted in discharge of foreign liability.

In the actual condition of Germany a foreign sale of marks is an inevitable accompaniment of the payment of reparations. Except by such sale there does not appear to be any practicable method for the Government to obtain the necessary foreign currency other than by exacting it from exporters as a condition of their receiving an export licence. But the exporter, who often has external obligations of his own to meet, does not want marks but dollars or pounds sterling, as the case may be, and forthwith sells the marks paid him by the Government for the currency he needs. If we add to this regular sale in the course of business the further sale by Germans who mistrust the stability of their own currency, we have a sufficient explanation of the stupendous drop in the value of German money.

Let me come back now to the question of what Germany can pay. Certainly she can pay something, though not in the form or under the conditions it is now sought to impose upon her. Many Germans possess foreign assets, whether investments or balances in foreign banks, and it would be a perfectly practicable proceeding for them to sell these assets to the German Government, who in turn could hand them over to the Reparation Commission. But it is an essential condition of such a transaction that the owners of the foreign assets should be willing to sell them; no Government in the present situation of Germany could force a compulsory sale. How then could this consent be obtained? I have no doubt that if these assets could be sold for an assured profit the holders would be willing to dispose of them. It must be remembered that to a considerable extent they are the proceeds of sales of marks

which have been flung by Germans on the foreign market under the well-founded apprehension that the pressure of reparation payments would rapidly depreciate their value. Relieve this pressure and the mark would immediately improve. It has still a far greater value in Germany than it has outside, and the German holders of foreign assets would have a clear advantage in selling them for marks to their Government.

It is impossible to give any precise estimate of the total value of these assets, but I believe it would be safe to put them at not less than a billion dollars. Whatever the amount may be, however, Germany could pay it, provided the fall in the mark was arrested. More than that I do not think she has the ability to find, at any rate for some years, and it would be a condition of this payment that no more should be demanded of her for a long time to come. I believe that, looking merely at the amount to be received, the creditors would gain by abandoning the attempt to obtain other money payments for a period of at least three years, and I am quite sure the world as a whole would be an immense gainer in the general stabilization of exchanges which would ensue upon an arrest of the fall in the mark.

Before I leave this part of my subject there is one observation I should like to make. I have no wish to minimize the just claims of the Allies against Germany, and I recognize the serious political difficulties which stand in the way of their abatement. But no solution of the reparation problem is possible unless political considerations are subordinated to economic facts. What Germany can pay may not be a simple question, but it is a question capable of being answered. Unfortunately the answer runs counter to popular hopes, popular passions, and, more formidable still, a popular sense of natural justice which prescribes that the defeated enemy who planned the War should make good the damage suffered by the victors. And so no authoritative answer is given while Europe slides into ruin.

I have dealt at length with the reparation problem in an endeavour to show that a nation, except in so far as it has an exportable surplus, can only pay foreign debt out of the wealth it has accumulated outside its own country. If we pass now to the other international debts we have to recognize that the general argument is equally applicable to them all. Have the debtors an exportable surplus and what are their foreign assets? With regard to the latter

question the only debtor possessing any large accumulation of such assets is England. Notwithstanding her immense sale of securities to the United States in the second and third years of the War, a sale which largely furnished the means of paying for the goods of all kinds bought by the Allies, England still owns sufficient foreign securities to cover her debt to the United States two or three times over. But neither France nor Italy has similar reserves of wealth, and I doubt whether either of them has sufficient to meet more than a trifling part of their foreign debt.

There remains to be considered their exportable surplus in the ordinary way of trade. I shall speak later of the circumstances in which an exportable surplus from production usually arises, and I shall give my reasons for thinking that nothing more than comparatively small annual payments can ever be made in this way. But it will be more convenient now to deal with an individual debt, and I will ask you to consider the particular case of the debt due from France to England, which I can speak about with more freedom as it is a debt in regard to which my own country is the creditor. We shall get a clearer view of it if we examine the circumstances in which it was incurred.

During the War France developed an immense demand for goods of foreign production. As an increasing proportion of her man-power became engaged in her army, her capacity to supply herself was progressively reduced. She had no abundance of foreign securities with which to pay for her requirements, and she could obtain the war materials indispensable for the maintenance of the fight in no other way than by borrowing the money to pay for them. Before the United States came into the War France had borrowed 1 billion dollars from the British Government, and this amount was subsequently increased to over 2½ billion dollars. The price of the goods bought by France was naturally high. Commodities produced to meet an urgent war need can never be cheap. But France was obliged to have the goods, whatever the price, and a great stimulus was given to American and British trade.

Let us now reverse the process and imagine France paying off this debt. She could only do so by producing goods and exporting them in very large quantities, far in excess of normal trade demands. If the general trade organization of the world permitted of the absorption of this additional French output, I have no

doubt that her industry would be capable of the effort necessary to enable her to pay interest and sinking fund on her debt. But would there be any willingness to receive the goods? Neither England nor any other country is prepared to-day to pay for and consume goods on an exceptional scale. The immense demand created by the War has no parallel in peace. And yet how is France to pay unless an exceptional demand exists? The truth is that her debt is far too great in relation to ordinary international trade possibilities. It was incurred by the purchase of goods required in war and bought at war prices. It could only be discharged by the transmission of goods, not wanted in peace, and sold at no less high prices. We became accustomed in war to talk in billions. Our language was suited to the circumstances of the time, but, if we carry our minds back to 1914 and return to the ideas appropriate to peace conditions, we shall recognize at once that France has no trade surplus or reserves of accumulated and exportable wealth to enable her to meet her present external liabilities.

There are of course conceivable, though I trust improbable, conditions in which the French debt to us might be repaid. If we were at war and the call upon our men to line the trenches was such that many of our mines and factories had to close down; and if France were at peace and at liberty to increase her output to the utmost of her capacity she might pour upon our shores war material and stores equal to the whole amount of her debt to us. But in what part of the globe is there a demand for this additional output in time of peace? The mere endeavour to extend her foreign sales to the necessary degree would disorganize the trade of the world. We have seen the painful effect of an enforced competition by Germany; we should experience precisely the same results from a similar effort by France.

The inevitable conclusion is that these international debts are far too great for the capacity of any of the debtor countries except England. She alone in her accumulated foreign investments has adequate resources with which to discharge her liability to the United States. Of the others, France has the greatest resources, but they are, I believe, quite insufficient to meet her obligations. The whole subject requires a rational reconsideration by the creditors, who must keep steadily in view the immediate effect of the payment of these debts on the general trade of the world. The creditor countries will obtain greater advantage

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from trade prosperity, which will ensure full employment in their factories and workshops, than they can ever receive from the precarious payment of these debts. In the last two years we have had experience of the effect upon foreign trade of tumbling exchanges and broken-down credit, and though the consequences may be more serious in England than in the United States, where foreign trade is comparatively only a small part of the total trade, they are still grave enough in the latter country also to warrant the fullest and most careful consideration.

A debtor nation may in certain circumstances pay off its foreign debt with remarkable ease and rapidity. The indispensable condition for such rapid repayment is that there should be an extraordinary demand for its goods, a demand which is a natural accompaniment of war but does not exist in peace. I cannot help thinking that there has been a general, though very natural, misunderstanding of the conditions under which international payments are made. In its present magnitude the subject is new. In the past we have been accustomed only to the discharge of comparatively small liabilities between nations which has been effected partly by the remittance of gold, and partly by an extension of export trade facilitated by a fall in the exchange of the debtor country, and it is not easy for us now to free ourselves from the ideas we have formed in the course of our past experience. Mistaken opinions on these economic questions are not surprising, but they are causing grave disasters throughout the world. . . . A better understanding of international trade and of the possible limits of international payments will quickly enable us to find a remedy for the evils which now distract us. The public on both sides of the Atlantic are beginning to take a more rational view than was possible three years ago, and if the leaders of opinion direct our footsteps along the right path I believe the world is now prepared to follow it.

To sum up: the conclusion to which I am driven is that Germany can only pay now whatever she may have in foreign balances together with such amount as she can realize by the sale of her remaining foreign securities; that this payment is only possible if all other demands are postponed for a definite period long enough to ensure the stabilization of the mark and that future demands at the expiration of this period must be limited to the annual amount of Germany's exportable surplus at that time. Further, that England has the

capacity to pay to the United States interest and sinking fund on her debt; but that the other debtors are none of them in a position to meet more than a small part of their external liabilities, and in the existing condition of Europe a definite postponement of any payment by them is desirable in the interests of all the parties. The actual amount which the other debtors could ultimately pay should, as in the case of Germany, be ascertained by inquiry into their exportable surplus at a full and frank conference between creditors and debtors.

I have strictly confined myself to a consideration of the economic aspect of Reparations and International Debts, how they are payable, the general capacity of a debtor country to pay, and the effect of payment. If I have become convinced that an attempt to enforce payment beyond the debtor's ability is injurious to the international trade of the whole world, lowers wages, reduces profits and is a direct cause of unemployment, the conclusion is founded solely on economic grounds and is uninfluenced by any political considerations or any regard to the moral obligations of the debtors. I know very well that there are other considerations affecting these debts, but these are matters of statecraft to be determined by the rulers of the creditor countries according to their view of wise policy, which covers many interests besides those of trade and finance. The fact that a debtor cannot pay does not of itself discharge the obligation. The debt may become the subject of negotiation and bargain by which, if the debtor obtains relief, the creditor may still recover some advantage to which he may be justly entitled. - But I conceive it to be the duty of bankers to help so far as they can in forming a sound public opinion upon the financial and commercial aspects of these international debts, and it is in pursuance of this duty that I have ventured to make these observations to-day.

Dr. Prinsen Geerligs, in his cable, dated Amsterdam, the 3rd August, intimated that according to Herr F. O. Licht, Sugar Statistician, Magdeburg, the growing European beet-crop was estimated to yield 4,400,000 tons of raw sugar. The official report of the area under beet places the figures at 889,200 acres in Germany, 271,700 acres in France and 143,260 acres in the Netherlands. The production of sugar in Germany during this coming season is estimated at 1,600,000 tons against 1,330,000 tons realized last season.

Business Conditions in the United States.

By ~~Francis H. Sisson~~,

Vice-President, Guarantee Trust Company of New York.

Once again the United States has been subjected to grave economic injury through interference with essential services—the provision of fuel and of railway transportation. The time has come not merely to recognize passively the dependence of the general welfare upon coal and upon railway transportation, but to provide positive safeguards against a repetition of such conflicts as have recently arisen.

Government regulation of railway rates is an established and accepted feature of public control of the railways. To an increasing number of the public there seems to be a corresponding justification for authoritative regulation of wages and working conditions affecting employees of the railways. President Harding's insistence upon the duty of employees and managers alike to accept the decisions of the Railroad Labour Board is timely.

There are reasons scarcely less compelling which seem to many to justify subjecting the coal industry to such a degree of governmental regulation—but not Government ownership or control—as would prevent a repetition of existing conditions. All such regulation of industry is necessarily irksome in some degree to those whom it restrains in the interest of the public; but the alternatives are harmful in greater degree. In services essentially public in their nature, strike settlements which bring only temporary relief do not suffice. Measures, proposed by the President, to assure an uninterrupted fuel supply, are necessary.

(4) In spite of the seriousness of the coal and railway strikes, improvement in fundamental factors in the business situation continues.

Of special importance is the crop outlook. The Government's reports as of August 1, promise unusually good crop yields. The forecast of the corn crop indicates more than 3,000,000,000 bushels for the fourth time in the country's history, and the total indicated grain yield is slightly larger than the average of the record production of the war years. Other crops, including potatoes and tobacco, are expected to be extraordinarily large. Moreover, in western Europe the grain harvests have been injured by cold rains following a period of drought, which will increase the need for grain exports from the United States.

The consumption of cotton in the United States for the year ended July 31, 1922, was a million bales greater than for the previous year. The estimated carry-over on August 1, 1922, was about 3,700,000 bales less than for the previous year. The indicated supply of American cotton for 1922-23 is, therefore, less than that for 1921-22, while consumption has increased greatly. Exports of cotton yarns from Great Britain in July of this year were more than double those of July a year ago, and exports of cotton piece-goods were $2\frac{1}{2}$ times the amount for July, 1921. The strong demand both for domestic consumption and for export gives promise of continued support for the cotton market.

Prices of farm products generally are higher than a year ago. The effect of bountiful crops and fair prices upon the purchasing power of agricultural communities would go far toward the restoration of as nearly normal prosperity in this country as is possible until the European political situation is clarified.

The movement of prices in general continues upward. Recent wage advances, particularly the increases announced by the United States Steel Corporation and other steel companies, are especially significant at this time. This would seem to indicate expectation of possible labour shortage and the continued upward movement of prices for some time. They will undoubtedly strengthen also the belief that the present progress of industry in general has substantial foundations.

Further evidence of the strong under-current toward industrial recovery is found in the reports concerning employment.

On the recommendation of the Senatus, the University Court of Edinburgh have resolved to extend the period during which the diploma in forestry may be obtained until the end of the season 1928-29, the diploma to be open not only to officers and others who have served in His Majesty's forces during the war, but also to natives of India who have been appointed Indian forest probationers by one of the Indian governments, having also obtained a degree with honours in science in one of the Indian universities prior to entering on their course of study.

The Mysore University and Its Work.*

By H. J. Shabha, M.A.,

Late Inspector-General of Education, Mysore State.

I esteem it a great honour and privilege to be invited from my seclusion to deliver an address before this Convocation. The higher the honour the greater is my diffidence to appear before you after the eminent educationists who have given excellent addresses on previous occasions. I fear I was somewhat hasty when I accepted the invitation from a sense of duty to obey His Highness the Chancellor's wish which was to me a command rather than from any exaggerated feeling of self-esteem. I have put together a few thoughts that have struck me from a distance, for the expression of which I beseech your kind indulgence.

When shortly after my retirement from the Educational Department, over which I had the honour to preside for a period of twenty years, it was decided to establish the University of Mysore. I heard the news with feelings of great gratification. That the department which had been built up with strenuous exertion for a long series of years was to be crowned by a University naturally filled my heart with joy and pride. The wisdom of having a University of our own which had long been looked forward to cannot be doubted. The Colleges which had been affiliated to a distant University naturally would benefit the most by the establishment of a local University of which they would be integral parts, and in the management of which they would have a leading part. The curricula and schemes of examinations instead of being superimposed by a distant and sometimes unsympathetic body would be arranged to their own satisfaction by the local Professors on well-thought outlines. It is a great thing for a people to have a Teaching University of their own in direct sympathy with their wants and aspirations, so that they may have the kind of education they esteem most advantageous to their interests. No system of education can flourish so well as that which satisfies the needs and wishes of the people. Such a Teaching University does away with the disadvantages of external examinations and brings students and professors into intimate connection, so that cramming of the worst kind is effectively discouraged and real progress and scholarly knowledge are encouraged, while

at the same time physical education and the training of character are attended to with great care. The University of Mysore, though it cannot strike out any great departures from the beaten track of older Universities, will be free to encourage the study of Kannada, Sanskrit and Persian in a satisfactory way, to foster the growth and publication of a modern Kannada literature without which the education of a whole people cannot proceed, to promote the study of such new objects and provide such practical training as may satisfy the aspirations of the people and suit their economic and social needs, to form schemes of its own of female education and oriental learning, and to arouse patriotic love within the hearts of the people for a system of education which is under their own control. There is further no agency so powerful as a local University for extra-mural instruction, for not merely organizing what are called Extension Lectures but regular schemes for adult education for giving instruction up to the level of University standards to people whom circumstances have not permitted to acquire higher education but who have the desire and ability to profit by it. These are no small advantages, and that they are now available to the people of this State presages a bright educational future for them.

The Mysore State has always been distinguished for its earnestness and liberality in promoting education. No Native State or Provincial Government in India has been able to spare such a large proportion of its revenues for education as the Mysore State. This is hardly a place for giving comparative statistics, but your Educational Department can easily prove that the proportion of total revenues spent on Education in Mysore is the highest of any province in India, though it may be much lower than in the advanced countries of Europe and America, and in Japan. In an advanced State like Mysore a University was bound to come, and though some publicists may be tempted to be critical and look askance at the commencement, when in a short time it has proved its great usefulness, it will disarm all criticism and ungenerous comments.

One of the principal advantages of having a Teaching University of our own is to have a full time Vice-Chancellor who watches over the instruction and discipline of the students,

*Part of Mysore University Convocation Address delivered on 4th October 1922.

their physical welfare, their corporate life and intimate connection with their Professors. I may be excused however if I refer, for a moment to a possible danger, though it should be very unlikely, of the sense of responsibility of the Heads and Professors of Colleges getting weakened for the maintenance of discipline and the training of character. The authorities of a college should be solely and wholly responsible for the internal discipline of a college, and the bonds between the Professors and pupils should in no case get weakened. It is the personality of the teacher that exercises the most potent influence over the character and manners as well as the intellect of the pupil. It would be a misfortune if this influence became less for any reason.

It is often asked what is a University and what are its functions. Cardinal Newman in his eloquent language gives a definition which can bear repetition :

" If I were asked to describe as briefly and popularly as I could what a University was, I should draw my answer from its ancient designation of a *Studium Generale*, or 'School of Universal Learning.' This description implies the assemblage of strangers from all parts in one spot—from all parts; else, how will you find professors and students for every department of knowledge? and in one spot; else, how can there be any school at all? Accordingly, in its simple and rudimental form, it is a school of knowledge of every kind, consisting of teachers and learners from every quarter. Many things are requisite to complete and satisfy the idea embodied in this description; but such as this a University seems to be in its essence, a place for the communication and circulation of thought, by means of personal intercourse, through a wide extent of country. . . . A University is the place to which a thousand schools make contributions; in which the intellect may safely range and speculate, sure to find its equal in some antagonist activity, and its judge in the tribunal of truth. It is a place where inquiry is pushed forward, and discoveries verified and perfected, and rashness rendered innocuous, and error exposed, by the collision of mind with mind, and knowledge with knowledge. It is the place where the Professor becomes eloquent, and is a missionary and a preacher, displaying his science in its most complete and most winning form, pouring it forth with the zeal of enthusiasm, and lighting up his own love of it in the breasts of his hearers. It is the place where the catechist makes good the

ground as he goes, treading in the truth day by day into the ready memory, and wedging and tightening it into the expanding reason. It is a place which wins the admiration of the young by its celebrity, kindles the affections of the middle-aged by its beauty, and rivets the fidelity of the old by its associations. It is a seat of wisdom, a light of the world, a minister of the faith, an *Alma Mater* of the rising generation. It is this and a great deal more and demands a somewhat better head and hand than mine to describe it well."

Although in the above definition a University is defined as *Studium Generale*, that is a School of Universal Learning, it does not follow that every University should teach every subject. The expanse of knowledge is so wide, the number of sciences and their sub-divisions is so large that it is impossible for any University in the world to attempt to teach them all, and the resources of no State would suffice to maintain such a University. For a new University like Mysore, which is not endowed but is maintained wholly by the State, it is safest to limit its functions at first to an irreducible minimum of subjects. We must have Languages and their Literatures; in our case English, Sanskrit, Persian, Kannada, other Vernaculars and French; we must have History both Ancient and Modern, Philosophy, Mathematics, and Physics and Chemistry. We have already in addition to this irreducible minimum of subjects Economics, Commerce, Engineering and the natural sciences of Geology and Botany.

It is no doubt a disadvantage that the departments of Science and the Humanities in the Mysore University are placed at a great distance from one another and constant intercourse between students of both departments is not possible. There is no advantage so great in a University as the constant interchange of thought between students of Science and Engineering on the one hand and those of literature, philosophy and history on the other. A means of lessening this disadvantage is to bring about friendly meetings in rival contests of games, debates, lectures, and social gatherings. A social week in Bangalore and another in Mysore in different parts of the year for the students of both sections would combine pleasure with instruction. Such interchange of ideas removes narrow-mindedness, broadens the intellectual outlook, and produces a real world of culture and liberal learning.

Everywhere the addition of new subjects to the programme of studies depends on various

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circumstances, on geographical position, on a donor appearing with a handsome endowment, on an eminent teacher rising in our midst to whom students flock in large numbers and who can lead them on to advanced studies and research. As for endowments India is essentially a poor country, and we have hardly any Rockfellers or Carnegies among us. The Calcutta University is the only University in India which has been fortunate enough under the enthusiastic advocacy of Sir Asutosh Mookerjee to obtain large endowments from leaders of the bar and from Zemindars of Bengal. Even Bombay with its merchant princes has not shown yet anything more than a long list of scholarships and prizes as Mysore has already begun to show. But scholarships and prizes are not endowments for chairs, laboratories and libraries. Until the endowments come the expansion of the University has to wait, unless the State can without injury to other interests spare more funds and can take up the additional burden. But when they come sooner or later as they are bound to do in the case of Universities admittedly doing good work, the choice of new subjects will depend upon various circumstances, geographical, economical and social. In the case, however, of subjects, like mining and metallurgy it would perhaps be more advantageous to found scholarships to enable selected students to go to well-equipped European Universities of established reputation in the teaching of mining and metallurgy like Birmingham, Manchester, Sheffield, or to America than to have costly technological departments of our own. Agriculture and the sugar industry which are of great importance to the country should claim the first attention and also suitable subjects of applied chemistry like the chemistry of fats and oils, lac industry, of dyes, gums, resins and varnishes, etc. With the Indian Institute of Science close at hand which is handsomely aided by the Mysore State, important help can always be obtained in technological subjects from that Institute which is being re-organized at present on improved lines.

Before the further addition of other faculties and subjects to be taught by the University is discussed, it is to be hoped that the question of having honours courses separate from those of the ordinary degree in Arts and Science will be taken up in earnest. I believe it has been to some extent already discussed. But unless a clear distinction is made between the courses for an ordinary degree and those for an honours degree, the student of exceptional talents will

not be distinguished from another of average abilities, nor can the former be encouraged to do his best without such differentiation. Such a want of opportunity to excel given to students of excellent abilities is so much loss to the University and the country. The Madras University has set a most admirable example by providing honours courses which may be followed in Mysore. Moreover research work and training in the methods of research are the most important functions of a University which are best carried out when there are honours courses.

Though the number of faculties and subjects may perforce have to be limited in a young University, what is perhaps the most important aspect of University education must not be undervalued or forgotten. University teaching especially in a unitary University like Mysore exercises a most powerful influence on the character and manners of the students. It is the character forming influence of University education which is perhaps its most valuable part. A student may not on leaving the University find lucrative work which will rapidly advance his material interests, but his help and company will be sought after as of one who can always be relied upon, whose character is unimpeachable, whose lofty aims self-sacrifice and readiness to help his neighbours and hatred of all meanness distinguish him from his less fortunate brethren. A residential and unitary University gives such scope to high-minded professors and tutors for the exercise of elevating influence on their pupils' character and manners as cannot be found in any other educational institution. These influences exercised in an unobtrusive way leave a stamp on the mind and manners of young men which lasts a life time. It is in the University that young men have an opportunity of learning industrious and persevering habits, and that intense love of work which ensures their success in life. It is in the University that they receive those humanizing influences which broaden their outlook on life, and give such an insight into human nature as renders them worthy leaders of men in future. The material result of University education at the commencement of life may be small, but their moral elevation is their best reward. I am glad to say that the educated Mysorean is already making a good name for himself in other parts of the country. Respectful, obedient and of gentle manners he has by his keen sense of duty and devotion to work already won golden opinions wherever he has found work.

(6) There is no doubt that our educated men have often long to wait for adequate recognition of their merits from a material point of view in a poor country like India. The number of careers open to the best products of University education in India compared to those open to similar men in more advanced countries are, it must be admitted, very few, and cause anxiety to them and their parents who at great sacrifice have given them higher education. Until the economic state of the country improves by the development of trade and industries, the opportunities of fairly remunerative employment will, I fear, remain limited. The University cannot increase these opportunities. It can only help to a limited extent by shaping its courses of instruction so that they may suit the nature of employment in trade and industry. While a highly educated Englishman can find a career in the Church or the Army or in the higher administrative branches of the public service both at home and abroad, Indian youths have no similar openings. The higher grades of Engineering, Medical and Civil services are in British India mostly filled by Englishmen. In an enlightened Native State like Mysore however the higher grades of service are happily open to Indians of high education but the number of well-paid posts is necessarily limited in the State. The only careers usually open to an ordinary graduate are the lower grades of the Civil and Administrative services, at the bar, and in the Judicial, Public Works, Medical, and Educational Departments, and in other kinds of work which require literary ability and high character.

In industrial concerns there is a popular prejudice, which is often justified by facts, that a highly educated man is unpractical and not suitable for employment. Want of manual training in the education received at school is often his misfortune. A natural or inherited dislike of practical work which requires the ready use of hands is a great hindrance to admission to the avenues of industry. Unless such a man begins his career on the lowest rung of the ladder, he gets no chance of rising in industrial pursuits. But when once he has established his footing he can rise rapidly by his intelligence, ability and character above a number of ill-educated competitors. It is false pride often to refuse to make a modest beginning. Most young men have to learn that though they may be trained in theoretical science, in all industries requiring practical skill they have to commence work low down in a factory. The scientific training gives

him an advantage over uneducated workmen, and as he understands the reason of every process and can use his resourcefulness in time of need, he rapidly proves his superiority and may rise in a short time to the highest controlling post from very modest beginnings. This is a lesson in life which most of our educated men ambitious of a practical career have yet to learn.

Distinguished students in Europe and America on completing their courses of higher engineering studies at a University find it necessary to pay high premia of two to three hundred pounds a year for two or three years in order to apprentice themselves in great engineering or manufacturing works to acquire practical experience, and in such works they commence in the lowest grade and rise step by step through all the stages of work. It is such men that achieve success in their profession. During this apprenticeship they are subjected to severe discipline and have to obey the orders of their superiors implicitly although these orders may have the appearance of being inconsistent with the theoretical teaching they have had at College. They also learn how to handle labour as they rise to positions of responsibility, in which they have to control the actions of other workmen, and at the same time they acquire tact in dealing with their associates as well as their superiors. A man who is always at variance with his colleagues cannot be chosen by his superiors to fill positions of trust and responsibility. It will thus be seen how essential practical training is and how a successful industrialist should acquire all these practical qualifications after completing his theoretical course. It is true that great Engineering Works are few in number in India and earnest students may have to go to Europe or America for such apprenticeship. But the best use should be made of the existing works in India.

What is true of engineering students is also true of scientific students who are eager to rise in industrial pursuits. And the same thing is *mutatis mutandis* true of the literary scholars turned out by the University. They have to commence life in these days of keen competition in humble positions in the hope of future advancement unless they are blessed with means which make them independent. The struggle in life is growing on every side and in a poor country like India it is at its worst.

I refer to the difficulties of finding a ready career immediately after completing a course

of University Education, even in the case of those who have gone through a highly scientific training, not with any idea of discouraging the students but only as a warning against possible disappointment, and to invite attention to remedies or rather palliative measures under the existing circumstances. There is nowhere in India such eager desire to obtain the highest education obtainable as there is among the people of Mysore, because the intellectual classes have no other avenue to success in life except through higher education. Mysore being an inland Province has hardly any commerce, all its trade being an exchange of its raw products with neighbouring parts for what is necessary to supply its limited wants. Industries have not been developed and the country on the whole is poor, and its wants are few. Under such circumstances higher education is the only resort of ambitious young men. The lure of higher education attracts all men that possess some ability, and consequently there is a tremendous rush of students knocking at the door of the University for admission. The numbers of students in the Maharaja's College and the Central College which were 275 and 313 in 1916-17 have risen in five years to 518 and 359 respectively, the admission into the science classes of the Central College being necessarily restricted on account of the limited accommodation for practical work in the laboratories. The strength of the Engineering College which was 45 in 1917-18 has increased in the short space of four years to 156 in 1921-22. The Entrance Examination of the Mysore University was held for the first time in 1917 when the number of candidates was 244 of whom 120 were declared to have passed. The corresponding figures in 1921 were 1,029 and 287. If the increase proceeds at the present rate, it will soon become impossible to give admission to even half the number seeking it. It might be of use to inquire what remedies or palliatives can be found for the present state of things. One way would be to add to the number of Faculties by adding Medicine and Law as soon as may be convenient. The Medical Colleges of other parts of India are already unable to admit Mysorean students as all their available accommodation is required for local men. How far funds would be available for such expansion of the work of the University is a question for the administrative authorities of the State to solve. In considering the answer to this question it will have to be borne in mind that all departments of education, University, High, Middle and Primary,

should proceed with equal step, no one departments being favoured at the cost of the others. Another and perhaps more effective remedy would be to turn the present Collegiate High Schools into Intermediate Colleges by adding one more year to the course of study in the Collegiate Schools. The Intermediate Colleges would be formed of four classes, the present fifth and sixth forms and two College classes. The Entrance Examination would mark the completion of the Intermediate College course, while the S. S. L. C. Examination would mark the completion of the course ending with the sixth form. When the Intermediate Colleges are formed it should be possible to start alternative classes from the fifth form upwards, three periods in the morning being devoted to such cultural subjects as are necessary for all pupils, and the whole afternoon being devoted in the case of some pupils to academical subjects and in the case of others to special or vocational subjects and workshop practice, which would fit the pupils for practical work and a career in life without having to proceed to the University. Such alternative subjects might be various, and should include agriculture the chief industry of India, mechanical and civil engineering in their lower branches, training for a lower teacher's diploma than the B. T. Degree, domestic science for girls, commercial training, training for telegraphists and for police duty, etc. The number of vocational subjects may be increased from time to time as need is felt. As many of the vocational courses of the Intermediate Colleges may be co-ordinated with higher University teaching as possible, to encourage a few select lads to proceed to the University if they are deserving. Such co-ordination would be easy to make when there are Colleges of University status teaching the same subjects. Thus the Intermediate Colleges would provide education for a large number of young men who have not the abilities or the means of proceeding to the University but prefer to go into active life from the Intermediate College or High School. Along with the formation and expansion of Intermediate Colleges a well-thought-out scheme of Technical Instruction with graded institutions from Taluk and District schools to a Technological Institute, in which whole time instruction is given in technical subjects with workshop practice, may be instituted. To work out schemes of this kind will require time, experience and a heavy outlay. Yet it is worth while by offering alternative courses to boys of average abilities to check the present

rush to the University and reserve University Education for young men of the highest capacities and for those who desire high education in cultural subjects, and have independent means and leisure.

Similarly for women a graded scheme in subjects of domestic science from middle schools upwards to the University can be arranged. Your learned Vice-Chancellor referred to this subject in his address last year. It would be wrong to consider that subjects of domestic science are not worthy of taking a place in University education. When it is considered that women's chief function in life is that of maker of the home and man's chief happiness is found in a well-ordered home, any teaching which fits a woman to be a model wife and mother would be welcomed by Indian women who are unsurpassed in devotion to their duties. The humbler duties of cookery and laundry work may be taught in middle schools for girls by practical lessons while

subjects like hygiene, home-nursing and economics, etc., may be taught in Girls' High Schools. In the University a higher course worthy of it can be arranged for women in select portions of applied chemistry, sanitary science, applied hygiene, bacteriology, general biology, and physics with practical demonstrations and experiments, in economics of the household, in general and child psychology and ethics. There is quite enough of cultural and scientific training for women in a course like this to make it equal to an advanced course for men. A department for the education of women built up gradually from below is what is wanted for giving an impetus and right direction to women's education in Mysore. When the Maharani's College was started forty years ago by a few enthusiasts there were hardly two or three good middle schools for girls in the Province. Its establishment was evidently much too premature.

Licenses for Minerals in the Central Provinces.

A C. P. Press Communique says:— "The attention of the Central Provinces Government has recently been drawn to certain statements in the press to the effect that preferential treatment in the grant of prospecting licenses and leases for minerals in the Province has been accorded to European Syndicates or individuals. The policy of the Local Government with regard to mineral concessions must be conditioned by its responsibility for the prevention of wasteful exploitation of mineral deposits. Consistently with this obligation, which is not always as clearly recognized as it should be, the Local Government makes no distinction of race in dealing with applications for concessions. The only criterion which the Local Government observes is the possession of adequate means to ensure the employment of a competent prospecting agency or, in the alternative expert mining or geological knowledge which might offset limited financial resources. Under the instructions now issued by the local Government any reputable person possessed either of adequate means or of such practical technical knowledge can obtain certificates of approval without difficulty. At the same time in order to carry out its obligation for the protection of what must be a dwindling asset Government only renews such certificates in cases where adequate use has been made of them or where reasonable grounds have been put forward to explain inaction.

The admission of undesirable concessionaires bent only on snatching a temporary profit must be guarded against and Government would be failing in its duty if it did not secure by its mining regulations that the mineral deposits of the province should be economically and not wastefully exploited. During the quarter ending the 30th September 1921, 62 licenses and leases were issued, only two of which were in the names of others than either Indian individuals or Indian syndicates. During the quarter ending the 31st December 1921, 91 such licenses and leases were issued, in all cases to Indian individuals or syndicates. These figures sufficiently disprove the allegations either that Government shows undue preference to European concessionaires or that it unduly restricts the issue of prospecting licenses or mining leases to those to whom it has already issued certificates of approval. Many of the certificates of approval issued under these new instructions are taken out by persons with little or no mining experience who have not yet realized that the proper conduct of mining operations demands close personal attention or the employment of a skilled prospecting agency. In such cases, therefore, Government has been compelled to insist on a strict compliance with the terms of the licenses and leases issued, although such cases as have arisen have been dealt with the utmost leniency possible consistent with the circumstances.

India's Foreign Trade.*

By ~~D. T. Chadwick, I.C.S., Late Trade Commissioner for India, London.~~

In their Resolution No. 7123, dated the 15th October, 1920, the Government of India, Commerce Department, dealt with an administration report covering the first two years the working of the office of the Indian Trade Commissioner. I have now the honour to submit a report on the work of that office during the last half of my incumbency, viz., for the two years from April 1st 1920, to March 31st 1922. I vacated the office of Trade Commissioner three months later on June 30th, 1922. Those three months will be dealt with by one of my successors.

2. This is strictly an administration report and makes no attempt to discuss Indian trade with the United Kingdom during those two years. It has appeared from time to time that some uncertainty still exists regarding the purpose of this office. It exists to endeavour to assist the development of Indian industries and of Indian export trade. There are two large spheres of activity connected with commerce with which it has no concern whatever—

(A) The policy of the Government of India in commercial matters.

(B) The import trade into India.

If the office had to take a part in helping to consider these, it would obviously be most seriously hampered as an Intelligence Bureau.

The Department of Overseas Trade, an offshoot of the Board of Trade, is interested in the exports of the United Kingdom to all countries in the world, including India. In fact they maintain their own Trade Commissioner in India. Most other countries also have their Consuls or other representatives in India. It is no part of the functions of the Indian Trade Commissioner's office to assist the import trade into India. Very harmonious relations have continued between my office and that of the Department of Overseas Trade, who have invariably referred to me enquiries regarding the purchase of Indian products, as I have referred to them enquiries regarding the sale of goods to India. This Department has, however, always assisted me with advice and information on any point, and as will be seen later has welcomed the participation of Provinces of India in the British Industries Fair.

There are four distinct limitations to the activities the office may attempt:—

(a) It cannot do any man's business for him.

(b) It can undertake no financial responsibilities.

(c) It is not an employment bureau to examine men's qualifications and engage them.

(d) It will not advise people about their investments or solicit capital for new projects.

It can often help with information bearing on these points but it cannot undertake them.

4. Subject to these restrictions the office can be and is of use to the business world. It aims at—

(i) Having indexed, and immediately available, all economic information published by the various departments of the Government of India, as well as all published statistics and legislative enactments relating to Indian Trade.

(ii) Having indexed and immediately available the names of firms exporting Indian produce from India as well as those importing Indian produce into the United Kingdom and other countries.

(iii) Assisting with introductions Indian industrialists and merchants who visit London on business.

(iv) Giving information to firms contemplating manufacture in India as to the possibility of obtaining in India much of their requirements.

(v) Sending to India information about new processes likely to be of interest to India.

(vi) Obtaining on request and sending to India trade opinions on samples sent from India.

(vii) Bringing to the notice of the Departments of the British Government any regulations which in operation bear adversely on Indian trade, provided no question of policy is involved.

(viii) Conducting enquiries on behalf of or answering questions raised by economic departments in India including Provincial Departments of Industries.

(ix) Generally at helping any business house connected with India in any difficulty or in any way in which it can do so fairly and legitimately.

There is a wide field here, in which the office can help Indian trade and development, and in every one of the classes cited business men have repeatedly stated that they have found the office of assistance. But, except

* The Indian Trade Commissioner's Report on his work from 1st April 1920 to 31st March 1922.

in the small matter of Hides Preference there is no need for any business man to come to the office at all. It issues no licenses; it tries no cases; it collects no revenue. It is as dependent for its daily occupation on its customers—i.e., in this case the general business world—as is any retail shop. So far it has not suffered from unemployment or lack of custom. But just as with a retail shop it can only increase or even retain its custom—and thereby endeavour to fulfil its objects,—by giving satisfaction to its customers. If the information it supplies is correct and promptly given, if the introductions it makes are obviously seriously meant and prove worth examination, the tendency is to use it more and more; if it fails in these particulars then its utility rapidly decreases and any introductions it gives may be promptly discounted or ignored. Thus when men call and ask for business introductions in certain lines, it greatly assists matters if they are not already known, if they come prepared to give in confidence information about their own business experience in that line and their financial standing. Questions directed to that end are made in confidence and not from curiosity but for the purpose of assisting the enquirer, and because, although no financial responsibility is taken by the office, yet the reputation of the office is involved to some extent in every introduction it makes. It thus saves time, if those from India who visit the office for the first time and are not known to it bring with them from India some introduction from India. The office works very closely in all matters of introductions with the Director-General of Commercial Intelligence in Calcutta.

5. The number of letters received in the office and the number of callers in each of the last four years is as follows:

	Letters received	Letters despatched	Number of Callers or Verbal enquiries
1918—19	3,734	4,930	1,367
1919—20	7,066	10,206	1,005*
1920—21	7,966	7,800	2,134†
1921—22	7,296	7,700	3,921

As explained in the last report the figures of 1919-20 sprang up so quickly chiefly on account of the work in connection with securing passages eastwards for commercial men—the autumn of 1919. That figure has, however,

been fully maintained, in spite of the severe trade depression throughout 1921. The figures of despatches exclude everything in the nature of a circular. It is impossible to record accurately all callers and telephone calls for information. So much is done over the telephone in London, and the enquiry so quickly turns from one subject to another that many escape noting. For instance, these figures exclude all telephone enquiries answered by the clerical staff itself without putting the enquiry through to one of the senior officers. In India most of such enquiries and answers dealt with by the staff would be the subject of a letter. The figures so far for the current year both in letters and enquiries are in advance of those of last year at the same time. These figures seem to show that the office is both getting better and better known and is being more and more used.

6. The Director-General of Commercial Intelligence sends us each week a very short and excellent cable of commercial news. To this is attached, in the briefest form, in the office any immediately cognate information and also a list of important economic publications received in the office during the week. The note thus prepared is printed and distributed among banks and business houses. Many have expressed their appreciation of this and many, I know, keep them carefully filed. The weekly circulation at the end of March, 1922, had reached 216. One interesting thing was that copies had reached India and requests were received from two widely distant ports in India to post copies regularly to them. This seemed curious as most of the information is originally derived from India. Facts are simply given. Comment and discussion are avoided. We are greatly indebted to the Director-General of Commercial Intelligence, Calcutta, for his succinct summaries.

7. It gradually became clear that there was frequently a very small, but when it existed a very real, demand for many of the small brochures issued by the various Departments of Government, such as Forests, Geological, Agricultural, etc., dealing with particular economic products, as well as a wider demand on copies of Acts affecting trade. The custom in retail shops of enclosing with letters a cyclo-style list of their most recent specialities ready for sale, was adopted in the autumn of 1921. Between December, 1921, and March 31st, 1922, 216 of such publications were sold. They are not publications which appeal to the general public, but are frequently of great

*Five months only.

†Nine months only.

use to the person who is interested in that particular matter. More can still be done in this matter. Care was also taken to send such publications when received to the particular technical journal, which specializes in that class of subjects. I am not referring here to well-known publications, such as the *Review of Trade* or the Report of some very important Commission.

8. In order to help the Indian exporter the preparation of a series of short compact bulletins on the commercial aspect of the various Indian products was commenced giving as far as possible, the commercial specifications required for different uses, the prevailing trade terms and conditions, the customary methods of sale, the chief uses, particulars of the chief competitors that Indian produce had to meet. Attention has first been given to the mineral products of India, since on that subject I was fortunate in having the very able assistance of Dr. Coggin Brown, who was later followed by Mr. Fox. Dr. Coggin Brown prepared and sent to India notes dealing with Manganese Ores, Magnesite, Monazite, Antimony, Arsenic, Bismuth, Wolfram, Chromite, Molybdenum, Tin, Bauxite, Borax, Corundum, Garnet, Mica, Zinc, Lead, Asbestos, Barytes, Mineral Colours, and Mr. Fox has done the same with Glass-making materials, Gemstones and Semi-precious Stones, Sulphur, Flourspar, Phosphates, Potash Salts. These have all been published as special bulletins by the Department of Industries with the Government of India. These should be of use in India. The merits of many of them have been widely recognized on this side and demands for copies of them have come from countries as widely distant as the United States and Roumania. These have all been prepared in the two years now under report and involved much trade enquiry. Dr. Coggin Brown worked at these with much enthusiasm and judgment and Mr. Fox is carrying the work through.

9. *Special works.*—The two years under review saw a full share of special work falling on the Trade Commissioner and his office. There will, I believe, always be some such special task in hand. As one disappears another arises.

The British Industries Fair.—The Arts and Crafts Emporium, Lucknow, and the Arts and Crafts Depot, Lahore, took part in the British Industries Fair at the White City both in 1921 and 1922. Bombay and Assam also participated in that of 1921 and Burma in the one of 1922. Mr. Heard and Mr. Heath,

the Arts Officers of the United Provinces and the Punjab, respectively, were present at the 1921 Fair and Mr. Holme, the Director of Industries in Burma, at that in 1922. At the 1922 Fair Mr. French, C.I.E., C.B.E., was in charge of the articles from Northern India. The general trade depression in 1922 was exceptionally severe and consequently the market for luxuries and ornamental furniture, of which Indian art crafts for export largely consist, was very dull. In spite of this the sales and orders at the 1921 Fair amounted to £3,971 or £2,493 more than that at the first venture, and at the 1922 Fair the figure again rose slightly to £4,759. In order to help the Provinces in their early ventures at encouraging an export trade, it was arranged that goods ordered at the Fair could be delivered through the Trade Commissioner's office and that that office would collect the amounts due before delivering the goods and remit the proceeds. It would also deal as far as possible in the first instance with any complaints. A certain amount of agency fees and commission is thus saved to the Provincial Departments. This involves a good deal of detailed work throughout the course of the year and is not a class of work which the office could continue indefinitely especially if it increased much in volume. It is, however, satisfactory to record that the deliveries and execution of orders after the Fair in 1921 both by the United Provinces and the Punjab were much better than after the first Fair of 1920. Whether it will be possible by this means to encourage an export trade in the better articles of village craftsmanship, it is at present difficult to say. I would have been more confident if there had been a greater increase in orders in 1922, but against this has to be put the following considerations:—

(i) Trade generally was so bad in 1921–22 that it was really a great thing not to have to record a decline.

(ii) Foreign exchanges were so adverse and uncertain that foreign buyers were especially chary about placing orders.

(iii) It is dishonest to take orders beyond the capacity of the Provincial Department to execute promptly and satisfactorily. So far the United Provinces and the Punjab have met their commitments, but it is so notoriously difficult to organize village craftsmen to ensure prompt attention to orders that one is somewhat afraid of large orders.

(iv) Some most promising connections have been made. These have only been secured by appearing regularly at successive Fairs.

The United Provinces have followed a regular policy in this. No results worth having can, I am sure, follow from spasmodic participation in these Fairs. Trade can only be built up on confidence, which in itself grows from continuous and not from occasional transactions.

10. From October, 1920, onwards I was Chairman of the Committee of firms appointed by the Government of India to sell wheat on Government account. Till the middle of February, 1921, when Government withdrew, 240,281 tons of wheat were sold. The Committee held 35 meetings. Except for a few vessels in regard to which arbitration proceedings are pending the accounts have been closed and audited. Throughout all this work I received the most cordial and open assistance from the firms with whom I was working.

11. During the period under report the securing of dyes on reparation account occupied much time. It proved to be an extremely troublesome and involved class of work, and especially during 1921-22 claimed an undue proportion of my attention. The difficulties, however, which arose were dealt with.

12. The office continued to issue certificates under the Hides Preference Scheme for hides and skins tanned in the United Kingdom. The leather trade was one of the first to feel the effects of the slump in trade and has not yet recovered. At the time of the Armistice stocks both of boots and leather held by the Ministry of Munitions were exceptionally large. It has taken a very long time for them to pass into consumption. In fact the Disposal Board still held on March 31st, 1922, big supplies of tanned kips. The difficulties of the market were further increased by very heavy shipments of hides from India on consignment during the short boom period. It was therefore found necessary to increase the currency of the bonds up to two years normally and for those issued in the first year of the Act up to three years. No further extensions are contemplated. The number of certificates issued in each year were as follows:—

For hides and skins shipped from—	1920-21	1921-22
Calcutta ..	49	99
Bombay ..	45	67
Karachi ..	180	52
Madras ..	34	28
Rangoon ..	152	61

The scheme worked smoothly.

13. I continued to serve on the Empire Cotton Growing Committee and its successor the Empire Cotton Growing Corporation the organization of which was recommended in the report of the Committee. The Corporation has been incorporated by Royal Charter and has received a capital grant from the British Government of over £900,000 contingent on a cess of six pence per bale of cotton used in the country being levied by the cotton trade. The vast majority of those interested in the cotton trade have agreed to this levy and steps are being taken to make its payment compulsory. The object of the Corporation is generally to foster the cultivation of cotton within the Empire. The controlling body consist of representatives of various Home Government Departments, of Governments Overseas and of all sections of the large cotton industry. It has been fortunate to secure the services of Sir James Currie, K.B.E., as its first Director. The Corporation sustained a very severe loss through the untimely death of Mr. James McConnel, the first Chairman of the Executive Council, and Chairman of the Fine Cotton Spinners, to whose foresight, enthusiasm and hard work on and of the Committee the Corporation mostly owes its existence. The Corporation should prove to be a potent agent for encouraging the cultivation of good types of cotton, largely in new regions.

14. I also continued to attend the meetings of the Empire Flax Growing Committee.

15. In June, 1921, I was placed on the Executive Council of the British Empire Exhibition. Under the guidance of the High Commissioner a site was provisionally secured for the Indian building. Preliminary estimates of probable expenditure were also prepared and submitted to the Government of India. Possible drawings for the buildings were also obtained for consideration, and every effort made to prepare the way for the Exhibition Commissioner in case India decided to take part. Such a decision was made by Resolution of the Legislative Assembly in March 1922. The Management Committee of the British Empire Exhibition now meets weekly.

16. The Government of India were kept informed of the progress of discussions and views on certain large subjects which might possibly have considerable bearing on Indian trade, e.g., Hague Rules, etc.

17. The office was used as Headquarters by some of the Government of India and

Provincial officers who were home on special duty or for special enquiries, e.g., Mr. Henderson who came with a view to organizing trials in India of Motor Steam Ploughs and other agricultural implements, Messrs. Heard, Heath, and Holme in regard to the British Industries Fair, and Mr. Holme for preliminary enquiries affecting the separate representation of Burma in the British Empire Exhibition.

18. *Office organization.*—With the appointment of a High Commissioner for India in September, 1920, the office of the Indian Trade Commissioner became directly subordinate to him. This proved of the greatest assistance to the office, by defining more clearly its functions, by establishing more firmly its position, and to me, personally, by making it not such a single handed task. The position of a High Commissioner, with a Trade Commissioner as one of his subordinates, is one well known and recognized in London. Many found it difficult to understand the position of a Trade Commissioner, who appeared to be entirely alone and who only admitted to an indirect subordination to one of the Departments in Whitehall, the India Office. The appointment of a High Commissioner regularised his position in their eyes, and in this way, in addition to the advice, assistance and stimulus which the office has directly received, the appointment has been of the greatest advantage to the Trade Commissioner.

19. I have fortunately had more regular help from gazetted assistants than in the first two years of my work. Mr. Rice who joined in September, 1919, continued with me, and in July, 1920, Mr. B. D. Asli, from the Bombay Secretariat joined the office. His arrival had long been looked for, as I had been promised a permanent Indian Assistant and had been expecting him for two years. Dr. Coggin Brown of the Geological Survey who was attached to this office and also instructed to represent India on the Imperial Mineral Resources Bureau went on leave in September, 1921, preparatory to returning to India. Mention has already been made of some of his work. He also dealt with all enquiries affecting metals and minerals which came into the office and was extraordinarily successful in gaining the confidence and good opinions of business men. He was succeeded by Mr. Fox who is following on the same lines.

20. In 1920 the clerical establishment was almost entirely recast owing to the retirement of the ladies, who had helped us during the war and their substitution by *ex-service*

men. The staff is paid on the sanctioned Treasury scale. The work was entirely new to each one of them; but they have all worked with keenness and interest. I would especially mention Mr. Butler for his work on wheat and Mr. Barlow for the enthusiasm with which he has attended to the general information. Mr. Faignes and Mr. Berry in more monotonous posts have worked carefully and been prepared to meet a rush cheerfully. Miss Ellis has been invaluable in her sphere and is the only one now left of those who originally joined the office. The occupants of most of the other posts have changed three or four times. The total cost of the office, including all salaries and all charges was in each of these financial years £8,328 and £9,158, respectively.

21. The object of the office is to strive in all ways, within the limitations mentioned in paragraph 3 above to aid Indian industries and Indian trade. The work is fascinating in its variety and much of it is done by personal interview. It is on the whole the small definite enquiries which appear to be the most important. The prompt answering of these, some of them apparently exceedingly small, have brought the most generous thanks from business men; whilst the omnibus enquiry or the vague one which may have occupied much time to answer frequently leads to nothing. Whatever assistance an office such as this can give depends very largely on the extent to which commercial business men use it, and their criticisms and suggestions are welcomed. In both these lines they have certainly placed me under a very deep debt of obligation. Visits from business men and manufacturers when they come over from India are especially welcome as it is from them that the latest views of business conditions and business thought in India can be obtained. It also gives an opportunity to explain the scope of the office. We have throughout received the utmost help from all the Home Departments of State with which we have had dealings, from Chambers of Commerce and Trade Associations whilst the business houses themselves have attended to our education. An office of general contact between the commercial community and the Government Departments and not one of administration can be of service both to the Government and to the business world.

The Budget Committee of the Czecho-Slovak Parliament has accepted a recommendation to reduce the supplementary tax on business profits by 10 per cent.

State Aid to Industries.

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The Madras State Aid to Industries Bill, prepared by the Hon'ble Mr. K. V. Reddi Naidu, Minister for Development, and introduced into the Madras Legislative Council at its last sittings, is a small document consisting of 18 sections detailing (1) the nature of the industries to be aided, (2) the forms of State aid, (3) the conditions of State aid, (4) the machinery to help the Government to administer State aid, and lastly, investing the Local Government with the right to frame rules and regulations to carry out all or any of the purposes of the Act.

The industries to be aided shall be such as have an important bearing on the economic development of the country and shall be (a) new or nascent industries, (b) industries to be newly introduced into areas where such industries are undeveloped, and (c) cottage industries.

The forms of State aid are (a) by grant of loans; (b) by guaranteeing a cash credit, overdraft or fixed advance with a bank; (c) by a subsidy for the conduct of research or for the purchase of machinery (which shall not exceed 40 per cent of the cost in both cases); (d) by subscribing for shares or debentures (a sum not exceeding 50% of the fixed capital); (e) by guaranteeing a minimum return on the paid-up capital (the amount so guaranteed not exceeding 50% of such capital); and (f) by making a grant on favourable terms of Government land, or of raw material, firewood or water the property of the Local Government.

If the loan or loans exceed in amount to two lakhs of rupees or upwards, the Local Government shall, and in any other case may, by the appointment of Government Directors or otherwise, take power to ensure such control over the conduct of the business or enterprise as shall suffice in their opinion to safeguard their interests.

The Government takes power to constitute a Board of Industries consisting of not less than 9 or not more than 12 members inclusive of the Chairman to assist the Local Government in dealing with applications for the grant of State aid under the Act and the Board shall consist of (a) representatives of banking, industrial and other recognized commercial organizations appointed by the Local Government or elected in accordance with rules pre-

scribed and (b) such officials as the Local Government may appoint, provided that the number of officials so appointed shall not exceed one-third of the total.

The Bill provides that no profit in excess of such percentage rate as the Government may fix from time to time shall be distributed as dividend to shareholders until the conditions on which the State aid has been granted are fulfilled.

The rest of the Bill contains details about the method of recovery of any moneys due to the State under this Act and the extent of control that the Local Government should exercise over the industries.

The Bill is the outcome of the recommendations of the Indian Industrial Commission. The Madras Government is to be congratulated for its being first in the field, though somewhat late, to carry out this policy. There is a general agreement among thinkers that in the peculiar circumstances of this country the State would be justified in risking the tax-payers' money (under proper safeguards of course) to give encouragement to such industries as are likely to acclimatize themselves under the stimulus of such assistance.

We welcome the Bill as a modest attempt to meet the necessities of the situation. We find that it is closely modelled on the lines of such assistance as outlined in paras 294 to 302 of the Industrial Commission Report. We notice, however, that there is no provision in the body of the Bill, as demanded by the Report, that "where industrial undertakings receive Government aid, *e. g.*, by way of guarantee or subscription to share capital, their capital should be raised in India in rupees" (paragraph 298). This is important since the Indian tax-payers' money should not be lent or spent to aid foreign enterprise which must stand on its own legs if it wants to thrive in India. We trust that this clause will be incorporated in the body of the Act when it emerges out of the Legislative anvil.

Secondly, the Bill makes no mention of another recommendation of the Industrial Commission that "agreements to purchase output may be freely given to concerns in manufacturing articles not previously made in the country, and, in other cases, with greater caution and with due regard to existing interests in India, provided such agreements are limited

in point of time and are accompanied by suitable conditions as to quality and price and provided such articles are required by Government for its own purposes" (para 295). We were told the other day by the Hon'ble Mr. K. V. Reddi Naidu himself, when he explained the provisions of this Bill in a public meeting in Madras under the auspices of the Indian Economic Association, that the reason why this clause was not incorporated in the Bill was due to the fact that under the existing arrangement the Government had already such a power, but we are of opinion that there is no harm--on the other hand, there is much gain--in definitely inscribing it in the body of the Act so that there may not be any room for evasion.

Another defect is that there is no clear definition in the Bill as to the conditions under which the different forms of aid will be applied to particular industries; for instance, what ought to be the nature and condition of an industry in which the State proposes to take shares? The Industrial Commission laid down that "the Government might contribute directly towards capital resources as a shareholder in a few industrial ventures which Government may consider of importance to natural safety, but does not desire to undertake by its own agency, though it finds it necessary to have a continuous and effective voice in their management" (para 295). Perhaps the present Bill takes a more liberal attitude, a course which we ourselves favour, than what is laid down in the Report. We trust that the scope of such assistance will be liberally defined in the rules and regulations to be framed under the Act.

There is a danger that the Industrial Board, to be created under the Act, consisting of representatives from existing industrial and commercial bodies, is likely to prove extremely conservative in their views and to indulge in log-rolling to an undesirable extent, in spite of the provision in the Bill that no member of the Board shall take part in any of its proceedings relating to an industrial business or enterprise in which he is interested. To take a specific instance, a firm engaged in export of oil-seeds to foreign countries is not likely to favour the setting up of oil-crushing industry on a large scale in the country, especially if it finds it impossible to engage itself in the work. The "Agency firms" in India are for the most part anything but liberal in their attitude towards the starting of new and untried enterprises and in any scheme of represen-

tation they are likely to form an influential body in the Industrial Board. We mention this, not in a spirit of opposition to the establishment of an Industrial Advisory Board, but to show that the State would do well to have also independent ways of ascertaining the possibilities of a new industry and not rely solely on the recommendations of the Board. The German method of employing technical advisers to report on the possibilities of a new enterprise, though difficult to follow in India because of the paucity of technically trained men, may usefully be utilized, whenever possible, to supplement the work of the Industrial Board.

The Bill, as it is, is a rather general document and the extent to which industries can hope to secure specific help under each of its sections and the extent of control that is likely to be exercised which will not stifle initiative and enterprise are yet to be decided by Rules and Regulations framed under the Act. We trust that these will be conceived in the same liberal spirit as the body of the Act itself. We also hope that more specific details of help to cottage industries will be incorporated in the Act such as promise of funds for Co-operative Societies or to private individuals willing to start small industries.

Of course, as the Hon'ble Mr. Reddi Naidu himself pointed out recently, "the Bill does not create a new heaven and a new earth." The result of its operations will not be an immediate expansion of new industries, large and small, in every nook and corner of this Presidency. In the first place, the amount that the State can so advance is strictly limited at any time and in the present circumstances of our finance, it may not be forthcoming at all. But it is something that the State has a machinery ready to hand to help industries when funds are available. We hope that, when normal conditions prevail, a far larger proportion of the finances of the State will be diverted to this end than has been hitherto done.

Further, financial aid to industries, though very important, is not the sole controlling factor in the success of an enterprise. The facilities that exist to market the commodities and to buy raw materials, machinery and tools as well as industrial genius or ability to take advantage of favourable industrial conditions are equally important. In all these respects the State must render substantial assistance or create the conditions as a matter of general

policy. The State must favour Indian industries by exercising some control over the Railway rates and tariffs. Further, as Sir Alfred Chatterton observed in his article on "Indian Prosperity" in the June Number of this Journal, "the greatest obstacle to industrial progress in India is *competition* (Let us add unfair competition sometimes directed to ruin an indigenous concern) which makes it worth no one's while to do anything." We are at one with Sir Alfred Chatterton in holding that

"Judiciously created monopolies would provide the inducements that are now lacking to attract enterprise," provided always the business is registered in India and the capital is raised in rupees.

Unless the problem of industrial expansion is not conceived in its broadest aspect and State help is not forthcoming at all points of unfair non-Indian competition to remove it, any system of financial aid will not only be futile but dangerous.

Trade of Bombay.

"The general trade prosperity which followed immediately the cessation of hostilities proved to be but transient, and from June 1920 onwards a severe reaction took place," remarks the Collector of Customs in presenting the annual report of the Sea-borne trade of Bombay during the year 1921-22. "The ill effects of a poor monsoon in 1920-21 were not counteracted to any appreciable extent by the effects of a good monsoon during the year under report." The embargo against the export of foodstuffs had to be continued, while the imports of wheat were encouraged. The report attributes the very serious dislocation of trade observed during the year to "the instability of exchanges, political inquietude, the conditions unfavourable for business, which prevailed generally throughout the whole world," and which resulted in a general decrease in the principal articles of both export and import trade.

Referring to the import trade the report remarks: "The most marked and the most important decrease is in the case of cotton piece-goods, particularly from the United Kingdom." The share of Japan, however, in this trade, has exceeded its record for the previous year by 10 per cent. Another important article of import consisted of large supplies of sugar received from Java and Mauritius, while Germany made slight progress in its trade with Bombay. The difficulties in the supplies of Indian coal as a result of waggon shortage and transport difficulties were reflected in the considerable increase in the imports of foreign coal, which were further encouraged by cheap freights, favourable shipping opportunities and unrestricted imports.

Another important feature of the import trade was the increase in the trade in raw cotton with the Kenya Colony, while the

increasing demand for oil fuels for Railway purposes was met with a large increase in the quantity imported.

The most noticeable feature of the export trade was the large shipment of raw cotton to Japan. Owing to the disturbed economic conditions of the principal markets in Europe, the export of oil seeds did not come up to the extent anticipated. The notable decrease in the value of exported yarn can be accounted for by the large local demand and the failure of Northern China as a buyer.

Referring to the mill industry, the report observes: "Notwithstanding the general conditions unfavourable to business that have existed during it, the year has been one of continued prosperity for the mill industry. Thanks to the "Khadi" movement there was a large demand for the coarser kind of cloth and a falling off of the demand for fancy goods both bleached and unbleached.

The revenue collected during the year amounted to Rs. 9,07,94,184, while the cost of working expenses to the revenue collected worked out at 1.8 per cent. The total foreign trade including treasure amounted to Rs. 227.31 crores, thus showing a fall of Rs. 22.16 crores. The value of the coasting trade has fallen by Rs. 1.94 crores to Rs. 71.03 crores. The report mentions the increased customs duties with the observation that "it may fairly be assumed that the increase in duty rates on so-called luxuries, if not actually discouraging importations on their own account, had some effect in assisting general depression."

The all-round decrease observed during the year under report was due to the adverse circumstances already mentioned. "At the close of the year, however," remarks the report, "a more hopeful feeling sprung up throughout trade and there seem to be perceptible signs of convalescence."

The British Cotton Industry.

By Sir Charles W. Macara, Bart.

The question exercising the minds of all who are engaged in the cotton trade is, whether this autumn is to bring about the revival in the industry which has been so long promised and so long deferred. Personally, I have great hopes in the near future, but, first of all, it will be necessary to put our house in order before we can expect that steady trade from abroad which we must have if we are to keep our workpeople fully employed and get a reasonable return on our capital. It must never be forgotten that we are dependent for four-fifths of our employment upon foreign trade. As we are still suffering from the aftermath of the war, the Cotton Control Board ought to have been continued.

The present position is a curious one. We are all aware that the world wants cotton goods; we are all aware that our greatest customers in the Far East, who have not felt the effects of the war as we in Europe have, can pay the prices at present being asked for these goods; and yet we are painfully aware of the fact that business is not prospering as it should. Both India and China, to whom we look chiefly, have had excellent seasons. They have not only had bountiful crops, but they have garnered them cheaply, and ought by this time to be placing orders freely for the goods that Lancashire makes and which they cannot procure elsewhere. Statistics show that for a population of 800,000,000 India, China, and Japan have combined only about 12,000,000 spindles, and these are engaged on goods which, generally speaking, do not compete with Lancashire. What is hindering this trade from coming forward?

It is owing largely, I believe, to our lack of business organization. It is the usual thing I know, to blame the merchants abroad for refusing to place orders for new goods while the high-priced stock left over from the boom is not yet fully disposed of; to trace our trouble to the bad blunders of our politicians in the Near East; or to see in the weak and procrastinating policy of the Allies in dealing with Germany, the cause of all our afflictions. I do not for a moment wish to minimise any one of these reasons. They are no doubt all contributory, but I contend that none of them is sufficient to account for a state of things, such as we have at present, when we are allowing a large section of the trade to make to

stock, thus playing into the hands of merchants who will only buy from the weakest sellers, and are slowly draining the life-blood from the industry.

For something like eighteen months this has been going on. Buyers have been on the watch for forced liquidations, and the consequence has been that producers of yarn have been several pence out on every pound they have sold, and manufacturers, also, have been losing heavily. This, of course, cannot go on much longer. In the absence of sufficient competition in the markets to put prices on a paying level, it is clear that supply will have to be kept down to the level of demand. Weak sellers will have to be eliminated, and those who require yarn or cloth will have to be made to pay, at the least, sufficient to cover expenses.

The remedy, I consider, is to be found in controlling the industry as we did in war time. Then, it will be remembered, we had a Cotton Control Board, equally representative of Capital and Labour, whose regulations were backed up by the State. The Control Board so arranged things that those mills which were working were levied upon for the good of those which were not, the compensation being extended to both employers and employed.

It was by organizing short time throughout the trade in 1903-04 that we got the better of the attempt to corner the American cotton crop, and it is by a compulsory levy on all the trade that we are seeking now to augment the Government fund to be devoted to the promotion of cotton growing within the Empire. If concerted action be good in these cases, and if it has been beneficial to the bleaching, calico printing and dyeing sections to have their trade agreements, why cannot we go a step further and put an end to the suicidal policy we have at present in the spinning and manufacturing sections of keeping machinery engaged in making for stock, only to sell the goods later on at under cost price?

I contend that it is a policy which will benefit no one in the long run, not even the distributors; but it is simply weakening the financial position of the industry. To go on dissipating our capital throughout the world is sheer madness, and the only way to stop the leakage is for us to arrange for the industry to be run as a whole

until such times, at all events, as the trade of the world can get back to the normal again.

There is nothing of the evils of the "trust" in what I am suggesting—I am not asking for the cotton trade a monopoly position which will lead to extortion and inordinate profits, but the establishment of a system of organization which will prevent buyers taking advantage of the producers at a time like the present. I have never been in favour of big profits, for the simple reason that they destroy steady trade in an industry like that of cotton, which ministers to the necessities of the poorest people on the earth, but profits we must have for the cotton-grower, the spinner, and the manufacturer, and be in a position to remunerate the workers adequately, if we are to keep going at all.

If we should regulate supply to demand, I feel sure that we should soon be on full-time working again, for once it was seen that it was of no use waiting to catch the unfortunate ones who are obliged to clear their stocks at

under cost, orders would be placed with more freedom, and we should get on a healthy level of working again.

I cannot imagine that Control Board management would have any other than a stimulating influence for India, China, and our other foreign markets are greatly in want of cotton goods, and in face of the short American crop, and the possibility of raw cotton being much dearer before the next six months have passed over us, buyers simply cannot afford to wait much longer.

The home trade is good already, and we are doing a fair amount for some of the foreign markets; but there can, of course, be no revival until the Far Eastern demand commences in earnest. That this will come, and come speedily, I have no doubt whatever if only we can place the trade on a basis which will compensate those engaged in it, and lift it out of the bargain-snatching rut that it has fallen into during the past twelve or eighteen months.

Automatic Train Control.

The recommendations of the Ministry of Transport Committee on automatic train control are sound and the Committee has not failed to take into account the financial problem. The first cost of the scheme recommended is only £4,660,000, which is comparatively small, but the estimate excludes single lines and goods roads, and only applies to such lengths of railways as have one or more tracks of rail all of which are used wholly or partially for passenger working.

Railway officers and men are, the report indicates, generally in favour of some form of automatic control. There are, however, two distinct schools of thought: one, which may be regarded as the older school, considers that the provision of automatic control at distant signals is indispensable, and that control at stop signals is of minor importance. Those who hold this opinion believe that if observation of distant signals by enginemen could be secured, accidents could be averted in nineteen cases out of twenty. The other school urges control at stop signals.

Several railway companies have installed automatic control systems. The Great Western Railway has about 200 miles of track and 100 engines fitted with an electro-mechanical apparatus; the North-Eastern Railway

has equipped about eighty-nine route miles with a purely mechanical appliance, and 75 per cent of the company's locomotives have been fitted with the apparatus. On the Great Central system forty-two route miles of railway have been selected for the installation of an apparatus which gives full control at stop signals. Experiments have also been carried out with a number of types of apparatus on the other Railways.

The number of inventions examined by the Committee totalled about 200, and as a result of the knowledge thus gained the committee has decided that the system likely to prove most suitable to existing conditions will be of the contact type designed to operate in conjunction with existing methods of signalling. Stress is naturally laid in the report on the need of standardizing the apparatus employed. Control at stop signals which should include a train stop device is regarded as of first importance. Under the scheme outlined in the report there would be general control at distant signals and an audible warning device at distant signals to meet fog conditions. If the full scheme cannot, owing to financial considerations, be carried out, it is thought that the preliminary step of introducing control at selected stop signals should be adopted.

Cotton Trade Troubles.

By Mark Meredith.

With a view to closer intercourse among cotton spinners and manufacturers throughout the world, the International Federation of Master Cotton Spinners and Manufacturers' Associations have decided to issue a quarterly magazine containing information of interest on cotton subjects. The first number of this "International Cotton Bulletin" has just been published and, though difficulties have been experienced in its production owing to printing troubles, it contains a vast mass of material on matters relating to the production and distribution of cotton and cotton goods in every country in the world. As every one knows, the cotton industry has been passing through a very critical period, and of special interest are the reports from different countries on the present position. The English Federation report an unfortunate year of depression, with short-time working. Wages in England are 90 per cent above pre-war rates. In France wages are reported to be on an average four times as high as in pre-war days. Particulars regarding Germany are supplied from a private source, the German association not being affiliated with the International Federation. This report states:—

Early in August the wages paid in the mills were more or less eight times as high as in the pre-war days, but with the constant changes in the value of the mark wages are subject to revisions taking place in most concerns every fourteen days. In view of the continued deflation of the mark the maximum wage has not yet arrived. The state of trade in Germany appears on the surface to be very good, but the balance sheets are described as being merely "mock balance sheets" representing objective untruth, as so much depends on the fluctuations of the value of the mark. The concerns which manage to delay payment of taxes and bills for a short period may by these means be able to show a big profit. It is realized that when the mark appreciates in value business is bound to suffer. Purchases of textile machinery from abroad are practically beyond the reach of the German mills. The present demand is decidedly good, but it must be realized that it is caused solely by the fear of further reductions of the value of the mark. Agriculture in Germany has had some very profitable years, and it is quite a common occurrence for a farmer to provide two and three

trousseaux in advance for his little daughters, and the public at large, rather than wait for a further depreciation, rushes to shops to buy such necessities as cotton goods regardless of price.

The following tables compiled from returns received at July 31st last shows a total estimated number of spinning spindles in each country:—

	Estd. No. of Spindles.
Gr. Britain	56,605,176
France	9,600,000
Germany	9,500,000
Russia	7,100,000
Italy	4,560,000
Czecho-Slovakia	3,549,845
Spain	1,805,785
Belgium	1,629,921
Switzerland	1,519,000
Poland	1,200,191
Austria	1,022,792
Holland	634,856
Sweden	487,152
Portugal	238,962
Finland	96,644
Denmark	65,464
Norway	6,870,804
India	4,645,853
Japan	2,247,936
China	36,943,000
U. S. American and Canada	1,051,112
Mexico	753,837
Brazil	1,600,000
Sundries	251,500

Grand total 154,555,267

Valuable reports are given of the efforts at cotton growing in a number of countries, and a suggestive article deals with 'some reasons for the lack of demand for cotton goods.' This deals largely with the difficulties of Manchester shipping houses owing to the fall in prices and the restriction of credit. What huge sums have been lost, it is said, can never be ascertained, but of all the "Manchester merchant princes" there are few left who can claim to be as well off as before the war. In conclusion the writer says: "In considering the reasons for the falling off in demand for cotton goods there are some minor developments of recent date which ought to be borne in mind. First, the price of cotton is too high

for to stimulate a normal demand. Wool, for instance, is relatively much cheaper; some of it can be bought to-day for 7½d. per pound. The result is, of course, that many articles of clothing are now being made from wool instead of cotton. Cotton at the present price is no more the article of clothing for the very poor. The falling off in the demand for fine cotton yarn is to some extent due to the introduction of the "jumper" knitted from

artificial silk. The jumper is replacing many fine "voile" blouses in Europe and America. Artificial silk is being used in many ways to replace cotton goods, and the recent establishment of many such artificial silk mills on the Continent indicates that some countries look upon this raw material as one with a future. Are we taking this point sufficiently into consideration when discussing the likely consumption of cotton in future years?

New Paint Medium.

A Glasgow correspondent writes to the *Times*:—A syndicate has been formed in Glasgow for the purpose of exploiting new paint and polish mediums, the invention of Mr. Charles N. Exley of the Plexter Chemical Company, Limited, Glasgow, and Mr. Charles H. E. Ogilvie, a well-known Glasgow artist and portrait painter.

After 15 years' study and research in their respective professional speeches, Messrs. Exley and Ogilvie have discovered a new vehicle which eliminates from paint all oil material. This interesting development in the use of paint, it is claimed by the inventors, will prove a boon not only to the artist but to the commercial painter and the public generally.

Early in his career as a portrait painter Mr. Ogilvie realized, as others had done before him, that the oil medium was the stumbling block to securing the permanency of colour that had been obtained by certain old masters. He accordingly applied himself to the task of discovering a medium which would give permanency of colour, and he ultimately succeeded in providing a paint vehicle which gave this effect to a much greater degree than that obtained by modern artists. He found, however, that the process was so laborious as to be outside the realms of practical painting. Some years ago he entered into collaboration with Mr. Exley in an endeavour to obtain a more practical medium.

Definite results have now been secured, and the inventors claim that the Exley and Ogilvie paint and polish mediums will give the utmost satisfaction to users; the tempera paints for the use of artists providing a real permanent colour, and in addition an oil or water colour effect when finished in accordance with whatever the artist desires.

With regard to commercial painting, the claim is put forward by the inventors that by the use of the mediums a distemper is produced, not only with permanent qualities

as regards colour, but with greater adhesiveness and better covering properties than that obtained by any known distemper on the market to-day; it gives the same effect as oil paint, and, unlike that commodity, is said to be capable of withstanding varying degrees of temperature.

A varnish has likewise been produced which, as a final coat upon the Exley and Ogilvie paints, is claimed to render them waterproof and impervious to the action of any chemical gas in town atmospheres. It is further stated that experiments are now proceeding with a new varnish (and it is firmly believed by Messrs. Exley and Ogilvie that the final result will be absolutely satisfactory) which will replace the aforementioned varnish and give a finish which has not hitherto been obtained on any class of paint work. It will, it is said, be waterproof and fireproof, and resist every known test for varnishes.

The ingredients of the paint and polish mediums can be produced at prices somewhere in the region of 50 per cent below the cost of such material as linseed oil used for paint and shellac for polish. The new paint and polish mediums, it is stated, withstood every test which could possibly anticipate the effect of time, these severe tests having been carried out by responsible scientists whose reports have been most favourable. To artists who paint in oil no difficulty presents itself in the changing over from one medium to the other, for the simple reason that the technique is exactly the same. It is also claimed that from one tube of colour artists will find that by employing the medium put up in three different forms they can use it either as water colour, body colour, or with an oil effect. Important advantages claimed for the Exley and Ogilvie paint are that it has no smell, and that it will not blister in the hottest sunshine or crack in the lowest temperatures.

U. S. A. and Indian Trade.

Our New York correspondent writing under date 12th September refers to the interest taken by the *New York Times* in the Trade of India. Giving prominence to Mr. E. C. Digby's visit to India and the Far East, this premier American paper *inter alia* remarked:—

Ernest C. Digby, formerly of the staff of *The New York World*, *London Times* and other American and English newspapers, is in New York as a special commissioner representing the Indian press, with a view to giving information to American manufacturers on the trade situation in India and the Far East. During the past two years he has travelled in India, Burma, Ceylon and other parts of the Far East, and has made a special study of trade conditions.

"It is difficult to understand," Mr. Digby said the other day, "why the extraordinary commercial and industrial development which India has experienced in recent years should have failed to obtain due recognition in the United States. Statistics show that the Indian market is more important to Great Britain than the markets of Australia and Canada combined. Those American manufacturers and merchants who examine the question will find evidence to justify the belief that the Indian market will absorb the manufactures of the world in increasing quantities.

"India wants locomotive engines, gas and oil motor engines, railway coaches, mining machinery, boilers, sewing machines, typewriters, machine tools, agricultural implements, electrical machinery and apparatus, scientific instruments and many other articles which are extensively produced in the United States. With the constant expenditure of large sums by the Government on the Indian main line railways, the demand for railway plant and rolling stock must steadily increase. An important factor has recently manifested itself in the readiness shown by native Indian investors to subscribe the capital necessary for the construction of the feeder lines which are destined to make an enormous addition to the wealth of the country.

"The rise in Indian wages, due to growing prosperity, is already producing its effect in directing attention of land-holders to the advantages of machinery, a fact which was recently pressed on the attention of American manufacturers by the United States Consul in Bombay.

"Oil engines and pumps, for lifting water", he wrote, "are successfully making their way into all the agricultural districts of this presidency. The introduction of these has awakened in the minds of thousands of land-owners and cultivators an interest in mechanical methods of doing work which is entirely new in this country. Engines of from four to nine horsepower and three to four inch pumps are being installed in increasing numbers, and in this connection a Bombay machinery dealer states that his sales of internal combustion engines worked on kerosene oil now run eight to one, as against sales of steam engines, and that for India the internal combustion engine has proved an ideal source of motor power.

"That India imports annually cotton cloth to the value of many millions sterling is known to every one, but few people appreciate the extent of the Indian demand for foreign clothing of other descriptions.

"There is also a very considerable market in India for boots and shoes of foreign manufacture. The explanation of the purchases of foreign articles of attire is to be sought in the changing habits of the people. The European population, indeed, is growing in numbers and in importance, but the greatly enhanced demand for foreign-made clothing is mainly the consequence of the adoption of European dress by Indians of the middle and upper classes. This change is accompanied by an increasing disposition on the part of all classes to purchase articles of every-day use imported from abroad.

"Caste prejudices, in so far as they relate to foreign goods, are fast breaking down, though they are not yet extinct.

"In my belief, India offers a larger market to American manufacturers than any other country in the world, and those who appreciate this truth and adopt effective measures to profit by the opportunities now offering may be assured that their enterprise will meet with a rich reward.

"There are two methods of doing business in India—through local agents or by direct dealing. The latter method is undoubtedly the most satisfactory where practicable, but in most cases foreign firms are obliged to appoint agents to represent them. Before appointing a firm as his sole agent, however,

the merchant should satisfy himself that it has branches in all the principal centres.

"India is not a country, but a continent. Calcutta, for instance, is 1,200 miles from Bombay; the conditions in the one city differ entirely from those in the other, and a firm which confines its operations to one or other of them cannot possibly do justice to a sole agency. Failure to appreciate this elemen-

tary fact has caused disappointment to many British manufacturers who have set out with the object of securing a trade throughout the whole of India. Next, a manufacturer producing commodities suitable for Indian consumption will find that judicious advertising is absolutely indispensable if he intends to procure a firm foothold for his goods in the market."

Sugar Machinery.

The manufacture of machinery for the extraction of sugar from canes is a very old industry in the United Kingdom. Omitting the manufacture of tropically-made wooden and stone mills, it may be said the industry originated in this country, the principal centres of manufacture being to-day the Clyde Valley, Liverpool, and Derby, says a writer in the "Times".

Every cane-growing country uses machinery produced in this country, but of late years, since the United States acquired Hawaii, Porto Rico, and the Philippines; these markets have been closed to us owing to prohibitive American tariffs on imports. Up to the time of the outbreak of the Great War, notwithstanding the preference enjoyed by American machinery entering Cuba, that island was still a valuable market, and the exports from this country were of considerable value and magnitude. American manufacturers practically confined their efforts to the above-mentioned countries, but during the war, when manufacturers in this country had to turn their attention wholly to the manufacture of war material, American manufacturers had practically a monopoly of the business. They were also assisted by the fact that American companies acquired large Cuban sugar factories and financed others; they were enabled to extend their works, and add considerably to their output. Since the Armistice, and particularly since the fall in the values of sugar, they have extended their operations to every part of the cane-growing world, and are active competitors in the British colonies, territories, and possessions, where their products are admitted on practically the same terms as British products, whilst British manufacturers are prevented by tariffs from entering American territory.

At the present time sugar-production in British territory is being conducted at a loss, due in great measure to the tactics pursued by American sugar men in 1920, which resulted in an accumulation of sugar in the Western Hemisphere greater than the consumption. This sugar has been for months

dumped in this country and elsewhere at a cost much less than that at which it can be produced. These adverse conditions in British territory have reacted on manufacturers in this country to such an extent that there are practically few orders for sugar machinery to-day, with the result that large numbers of men are thrown out of employment, and great distress prevails amongst them.

It may be argued that the number of men employed in the manufacture of cane sugar machinery in this country is relatively small, but this argument is misleading inasmuch as it does not take into account the numbers of men employed in other industries ancillary to sugar machinery manufacturers, such as makers of boilers, steel buildings, tubes, small pumps, agricultural implements, electrical plant, filter cloths, etc., in addition to those engaged in the supply of raw material, land transportation, and shipping. A very conservative estimate of the number of people adversely affected in this country by the depression in the sugar machinery business at the present time is 50,000 to 60,000. Further, the industry is of particular value to this country, as it is purely an expert industry, and in addition affords a wide field for employment of skilled mechanics and others.

Holding these views, the Sugar Machinery Manufacturers' Association had no hesitation in asking their chairman to attend with the British Empire Producers' Organization Deputation to the Hon. R. F. L. Wood, at the Colonial Office, on May 11, in order to give their unqualified support to the requests for further assistance put forth by cane-growers and sugar producers of the Empire.

Although not directly bearing on the subject, it is only right to point out that the sugar machinery manufacturers in this country have given their unstinted support to the Sugar School in Glasgow and to the Tropical College of Agriculture in Trinidad, in order that the youth of this country may have every facility for acquiring a thorough knowledge of the cane sugar industry.

The Use of Fish-Meal as Food for Live-Stock.

Prior to the Great War, the Germans were the chief consumers of fish-meal in Europe. In 1913, out of a total estimated production of 40,000 tons in the United Kingdom, as much as 30,000 tons went to the Continent, mainly to Germany, where it found a ready sale as a feeding stuff for cattle, pigs, poultry, and even for fish reared in ponds. The greatly reduced amount of imported feeding stuffs available during the war, drew forcible attention in Great Britain to the value of fish-meal, and, as a result, the owners of live-stock utilized it to a much greater extent than before. It became particularly popular with the rearers of pigs and poultry, but experience in other countries shows it to be equally valuable in the dietary of cattle, horses and dogs.

During the past two years successful experiments have been carried on by the Department of Fisheries in the manufacture of this meal. Two chief varieties are made, the one made from sardines, the other from mackerel. In both cases the whole fish is used, ensuring a thoroughly sound and wholesome product; such as might even be utilized as human food if the taste for it were acquired.

In its manufacture, the fish are first thoroughly steamed and then subjected to pressure to ensure the removal of as much oil as possible. The residue is then dried at a high temperature, ground to a fine powder and finally sifted, it keeps satisfactorily for a considerable time if packed dry into air-tight containers, such as kerosene tins. In a dry climate, it may be stored in bulk in bags.

Average samples of the two standard types of Malabar fish-meal have been analysed by the Agricultural Chemist, Coimbatore, with the following results:—

	Mackerel meal	Sardine meal
Moisture ..	8.75	7.74
Mineral salts chiefly phosphate of lime ..	4.90	17.50
*Crude Protein ..	77.44	59.29
Crude fibre ..	Nil	Nil
Oil ..	8.80	13.45
Unestimated ..	0.11	2.02
*Containing albuminoids or true protein	72.19	57.14

It will be seen that both are extremely rich in albuminoids and that a considerable quantity of phosphate of lime is present, ingredients of direct value in the production of flesh and bone. Carbohydrates (starch, sugar, etc.) are however conspicuous by their absence and

therefore these meals can be effectively and economically employed only when supplemented with other feeding stuffs rich in the missing ingredients, such as home-grown fodders and roots and grains rich in starch, as potatoes and maize. The proportion of fish-meal to the other dry food supplied should vary with the class of animal fed; as the result of experiments carried on in England, the Ministry of Agriculture and Fisheries, London, gives the following daily quantities as such as will give satisfactory results, viz.—

	Maximum
Horses ..	2 lbs. per head per day.
Cattle ..	3 lbs. " "
Milch cows ..	4 lbs. " "
Pigs ..	1 lb. " "
Poultry ..	One-tenth of the whole diet.
Chickens ..	One-twentieth " "

When introducing fish-meal into the dietary of horses and cattle care should be taken to do so very gradually and to blend it with the other food, so as to disguise the unaccustomed flavour. After a while the animals acquire a distinct liking for the mixture. Fish meal is particularly valuable in the dietary of milch cows, owing to their special need for a food rich in albuminoids, but very great care must be exercised to prevent any contamination of the milk arising through the agency of the milker, should the latter have occasion to handle the foods before milking. In India, with the smaller milk production of cows, probably a maximum of 3 lbs. should be imposed upon the amount of fish-meal allowed per head. For calves, sardine meal being richer phosphate of lime should be employed; its richness in this together with its quite satisfactory protein content makes it particularly advantageous for rapidly growing animals. It has been used in various proportions mixed with oatmeal, linseed meal and bone meal either as a porridge or fed dry in conjunction with whey. Larger proportions of fish-meal may be used for calves than for grown cattle.

As a general and quite safe rule, fish-meal fed to cattle should not exceed one-eighth of the total dry food consumed. In the case of poultry, this proportion needs reduction to one-tenth, while for chickens the proportion of fish-meal should be decreased by half. In England poultry rearers find the use of fish-meal, when used with due precaution, to give extremely good results both in respect of egg-laying and in the rearing of chickens.

British Town Planning Schemes.

The third annual report of the Ministry of Health says that it is becoming increasingly recognized that the policy of town planning is not only one which will guard the future growth of towns against the inconveniences and the serious evils which have been the result of the haphazard development of the past, but that it is, directly and indirectly, a measure for true economy. Many local authorities have by now realized how much they will gain by preventing the erection of buildings or other works on routes which will be needed, sooner or later, for important thoroughfares or on sites which will be required for open spaces or other public purposes—industrial, residential, or other—for which it is most suited, and, incidentally, securing transport facilities adapted to local requirements, particularly of industry, and they see the importance, generally, of making plans in good time so as to ensure that the operations of the private developer may harmonize with public needs, thereby often saving the necessity for public expenditure without any hardship to

the owner, and also of taking precautions so that when public works have to be executed they may be carried out at a minimum cost.

The total number of local authorities which had proposed or were engaged in preparing town planning schemes on the 31st March, 1922, was 167, the whole area covered by these schemes amounting to 744,222 acres. Considerable progress has been made with the preparation of model clauses for town planning schemes, and it is hoped that it will be possible to issue them very shortly. During the year under report twenty Interim Development Orders were issued under Section 45 of the Act of 1919. Further Joint Town Planning Committees have been formed during the year and others are under consideration. These committees are advisory, their functions being to prepare an outline plan and statement of development for the entire region concerned and to advise on the co-ordination of the schemes of the various authorities as they progress.

Indian Students in England.

The report of the Indian Students' Committee considers that the only permanent solution of the problem is the development of education in India. It draws attention to the diminution of the number of Indian students proceeding abroad that would result in the carrying out of the recommendations of the Public Services Committee, the Calcutta University Commission, the Industrial Commission and Lord Haldane's suggestion to establish an Indian Bar. It considers that, owing to the attitude of the students towards any purely official organization, it is useless to recommend the continuance of the Indian Students' Department as at present constituted. It suggests that each Indian University should establish a bureau advised by a Board consisting mainly of persons with recent knowledge of British Universities in order to give information, advice and assistance to students wishing to pursue their education abroad and to supply Foreign Universities with information with regard to students which would enable them to make a selection from the applications bureaux, the expenses of which would be met by special

Government grants. They would replace the existing Advisory Committees. Students unconnected with any Indian University should apply direct to British Universities as at present. The needs of Indian students in the United Kingdom which cannot be met by the British University authorities should be attended to by the High Commissioner but a provision of residential hostels and the organization of recreation, hospitality, and social intercourse should be left entirely to private enterprise. The Secretary of State or the High Commissioner should summon a Conference of representatives of all organizations interested in the welfare of Indians in Britain to discuss the best means of providing what was needed. To meet the special needs of industrial students strong panels of industrialists should be established in each province of India. The panel, representing all important industries, should assist the High Commissioner who should be responsible for finding facilities for practical training in the United Kingdom.

Industrial Notes from the United States.

By A. T. Marks.

Washington, D. C., U. S. A., August 30, 1922.

Henry Ford, America's automobile-producing wizard, has almost reached the point where he can take an iron mine, run the ore into the hopper, and turn out a finished and complete Ford automobile. In fact, the only break in the procession from the Ford-owned mines to the Ford-produced automobiles is in the railroad and steamship lines necessary to carry the ore from his upper Michigan iron mines to his automobile factory just on the outskirts of the city of Detroit, State of Michigan. While Mr. Ford does own a rail-road he does not control the transportation facilities between his mines in the upper peninsula of Michigan and his blast furnaces at River Rouge, near Detroit.

The first shipment of ore from Mr. Ford's mines in the upper part of Michigan was sent out a few weeks ago, and now about 800 tons of ore is being sent daily out of the mines and shipped by rail and boat to the blast furnaces.

The largest of the mines, known as the "Imperial," will supply but a small percentage of the iron required in the Ford industries, but it is planned to have similar mining developments follow at once, as Mr. Ford owns over 400,000 acres of land in the upper Michigan peninsula, and rich deposits of ore of many kinds are believed by experts to underlie a considerable part of the vast tract.

Operation of the Ford mines are as similar to the other industries carried on by the manufacturer as is possible. Working conditions for the men are revolutionary, say mining experts. When the workers come out of the mines they at once remove their working clothes, stand under warm shower baths, don street clothes and then go to their homes. The wage is \$6 per day for older employees and \$5 a day for those more recently added to the pay-roll. The eight-hour day prevails. The room in which the miners change their clothes is as carefully maintained as is the locker room of a club or university gymnasium.

The Ford plan, so far, has had little effect on working conditions in the mines throughout the Michigan peninsula, as his mines employ but about 400 of the total of over 15,000 miners on the Michigan ranges.

The Imperial is an old mine, which was acquired by Mr. Ford in a property deal. Several months have been required to put it

in shape for operation. Mining operations were started last December, and a pile of ore amounting to 600,000 tons had been accumulated up to that time, when orders from Detroit sent a steam shovel biting into the mass.

The mining railroad is constructed of old rails taken from the roadbed of Mr. Ford's railroad, the Detroit, Toledo and Ironton. The owner has announced that he soon will begin the construction of a steam electric plant at the west end of Lake Michigamme, and there develop power for the mine and the village of Michigamme, as well as for other Ford enterprises which the automobile wizard intends to develop in the near future.

The Ford automobile plant near Detroit at this writing is turning out 5,300 complete automobiles daily, or 30,000 weekly, in round numbers. Mr. Ford has announced that he will not cease in his efforts to increase his facilities and resources until the capacity of the plant is 10,000 machines daily.

CHEMICALS FROM CORN COBS.

By developing new methods of extracting furfural from corn cobs, chemists of the United States Department of Agriculture have greatly reduced the cost of making this chemical, which is extensively used in the manufacture of soluble and insoluble resins for stains, varnishes, insulating material, printing plates and many other articles. Furfural has been made commercially from oat hulls and has been selling for from 50 to 70 cents per pound; but when made from the corn cobs it is estimated that it can be manufactured at a cost of about 10 cents per pound. As a matter of fact, corn cobs are found to give the greatest yield of furfural of any of the commoner agricultural materials that contain it, while the demand for the chemical is rapidly increasing.

TALKING AND SINGING MOTION PICTURES.

The sound-recording camera, a marvellous invention that synchronizes the human voice with human expression and actions, is now an established fact. As I write demonstrations are being given in both New York and Chicago.

"It is no longer an experiment," declared its inventor. "The successful basic principles of the invention have been established."

This camera, which records the voice and all sounds on a film such as is used in the motion pictures is the result of many years of experimentation by Joseph T. Tykociner, an assistant

professor of research in the engineering department of the University of Illinois, who is the inventor.

The model camera and reproducing projector are solidly constructed and evidently the cumulative result of long and patient research. The camera not only registers sound, but takes a motion picture of the environment of the sounds. The recording of the voice or any sound is simultaneous with the registering of the picture. The film is developed, placed in a reproducing machine connected up with loud-speaking telephones, the voices projected with the pictures and all in unison.

The improvements in the loud-speaking telephone, the inventor says, would materially increase the volume of the voice.

This all means a very remarkable result—that there is no longer to be a silent screen play. It is to be a talking, laughing, singing, and weeping screen. Instead of registering silent contempt toward a certain personage the heroine will bawl: "You villain!"—her voice audible all over the theatre and projected simultaneously with the action on the screen.

The distribution of the voice in an auditorium or theatre is to be done by the loud-speaking telephones placed so that the punch of the spoken drama is given to the picture drama.

Prof. Tykociner is extremely enthusiastic on the reproduction of opera. "Music," said he, "can be more easily recorded by the camera than the speaking voice. The voices in an opera, the music, the orchestra, the dialogue, can be perfectly recorded and reproduced. Many noted plays, comedies and farces that are not adapted to the screen because of the wit and humor of the dialogue, the personality of the actors, etc., may now be reproduced and revived and find new favour. I have great hopes that it will cause a revival of many of the masterpieces of dramatic art. Its commercial possibilities are also a development which I am confident will mean much."

The invention, scientists are now pointing out, likewise means an entirely new school of motion picture actors and actresses, if the revolution which it suggests comes to pass. This new school must develop a capacity for using English correctly and acting intelligently. It has been said of many of the present-day stars of the screen that "if they spoke lines they would lose their jobs" which is undoubtedly true. The new order means something besides silently registering emotions and displaying a little of the art of pantomime.

IMPORTANCE of the "SPARK INTENSIFIER."

Every owner of an automobile will be interested in the so-called "spark intensifier." Much has been said both for and against the spark intensifier, as used extensively in connection with automobile spark plugs. Very few can explain the principles upon which the spark intensifier operates, although many know that by their use the ignition of some engines is very greatly improved.

According to a widely-known automotive engineer with whom the writer talked a few days ago, spark intensifiers are designed to cause a carbonized plug to fire in spite of its fouled condition. They contain a gap which is from one-thirty-second to one-sixteenth of an inch wide, and are attached to the spark plug in such a way that the spark must jump both the gap in the intensifier and the gap in the spark plug, as these gaps are in series.

In order to jump the gap in the spark plug a potential of about 5,000 volts is required, but before this value is reached a carbonized plug begins to let current leak from the coil, which lowers the voltage to such an extent that a pressure of 5,000 volts may not be attained, in which case there is no spark at the plug gap. The action of the spark in the intensifier, however—and automobile owners should note this—stops this preliminary leakage because it disconnects the spark plug wire from the carbonized plug. The high-tension current is then dammed up until it finally breaks down the gap in the intensifier, and the current comes with such a rush that it cannot all leak through the soot and some must therefore jump the spark gap, thus producing a spark at the plug which would not otherwise fire. In experiments made with the intensifier it has been found that, with oil-pumping engines, they may be used to advantage, but no real benefit can be said to be derived from their use on an engine free from spark plug trouble. Furthermore, there is a possibility that their continual use may result in harm—for example, if the gap is widened either by becoming jarred out of adjustment or burning away the voltage may build up to a point where injury to the coil insulation would result. This, of course, could only occur to coils that are not provided with safety spark gaps. In any case, the advantages of the intensifier are such that it is to the advantage of all automobile owners to investigate their merits.

CONNECTING RADIOPHONE WITH PHONOGRAPH.

The United States Patent Office has just granted a patent for a combination phonograph

and radio apparatus. A one-control radio receiving set with a super-amplifier that accomplishes with three tubes what has up to this time required five has been mounted in a console model phonograph cabinet and is connected to the horn of the machine. The outside aerial and ground are dispensed with by the use of a specially designed loop antenna, contained in the instrument, and which eliminates a large amount of static disturbance. As will be understood, the one-control makes the tuning very simple and easy. It has a dial which is graduated in definite wave lengths so that all that is necessary is to turn on the wave length on which any particular broadcasting station is operating. Within the cabinet are storage batteries, but of course these need not be used where an alternating current lighting service is available, for the set is provided with an attachment which will make it operate by connection to a light socket. The phonograph, when not in use for radio purposes, will play the standard disk records as all other talking machines do.

POSITIVES DIRECT FROM THE CAMERA.

The amateur camera man does not, as a rule, know that a positive picture can be made direct from the camera. Generally the development of a sensitized film or plate in a camera results in a negative image, the parts exposed to light being darkened. For many experimental purposes, or when the finished picture is wanted in a hurry, it is sometimes of great advantage to be able to make positives in one operation. This can be accomplished by the

employment of a simple "reversing" solution in the process of development. This solution is prepared from 30 gr. of potassium permanganate, 3 dr. of sulphuric acid, and 35 oz. of water.

The negative should be developed in the usual developer, but held somewhat longer than usual and until it is rather dark. It is next placed in the reversing solution and allowed to remain for three minutes. It should then be returned to the original developer, and the tray carried into the open daylight or under strong artificial light. The reversing solution eats away the parts of the image originally blackened in the developer, and the second development, with the sensitive surface exposed to light, blackens the remaining parts of the image, or those not exposed to light in the camera, resulting in a positive image. When the second developer has been carried to the proper depth the sensitized material—plate, paper or film—is washed and dried, no "fixing" being necessary.

By substituting bromide paper, cut to the proper size, for the plates or films used in the camera, direct positives can be obtained on paper. The paper will require about five times as long exposure as a plate or film, and the resulting picture will be reversed, as when an object is viewed in a mirror. If the finished positive is too dark it indicates that the exposure was too short, and *vice versa*—a point that must be remembered if the first attempts are not perfect. The reversal of an image requires also a reversal of judgment as to the causes of any imperfection.

Utilization of Coal Waste.

Germany's greatest user of coal is the Federal Railway, which formerly was able to utilize only 55 to 70 per cent of its combustible material, the remainder (cinder and ashes) having been regarded as worthless. In order to make use of this waste, which is said to contain 50 per cent or more combustible material, about two years ago the railway adopted the Meguin system of recovering coal from ashes. According to a report by the United States Consul at Frankfort-on-Main, thirteen large works, with a capacity for handling 420,000 tons of cinders and ashes annually, are now in operation or under construction. The amount of pure coke obtained is estimated at 164,000 tons, with an average calorific value of 5,500 units, compared with 7,000 units for good hard coal.

The fine coke, with the addition of fine coal and hard pitch, is used in making briquettes,

about 74,000 tons of coke briquettes being thus obtained, with a calorific value of 6,500 units. In addition to this, 256,000 tons of non-combustible clean slag are obtained; this serves for the manufacture of 130,000,000 slag stones, which are employed in building and possess the good qualities of both brick and "schwemmstein" (a kind of sandstone).

A full description of the woods is given in Dr. Foxworthy's bulletin, "Commercial Woods of the Malay Peninsula," also obtainable at the Agency. The bulletin contains other information likely to be of service to the trade. Tables show the specific gravity of the various woods, as well as the dry weight and seasonal weight in pounds per cubicfoot, and a chapter is devoted to the possible uses of the work under varying conditions.

Canadian Finance and Trade.

Montreal, October 1st, 1922.—As the wheat crop moves eastward at the rate of nearly two million bushels per day, a wide variation still exists in the estimates of the actual yield. These estimates gradually mounted as the harvest drew to a close, and some authorities have placed the yield above the 393 million bushel crop of 1915, which was the largest in the history of the country. Although the acreage sown to wheat this year is considerably greater than that of 1915, the average yield per acre will be somewhat lower. At the beginning of September, the Dominion Bureau of Statistics published a preliminary estimate of the yield of cereals, placing the wheat crop for all of Canada at 388,733,000 bushels from a sown acreage of 22,630,900. This is an average of 17.25 bushels to the acre in comparison with 13 bushels to the acre last year when the total yield was 300,858,100 bushels from an acreage of 23,261,224.

The visible supply of wheat in Canada on the 9th of September was 3,865,000 bushels greater than at the same time a year ago. The American visible supply on the same date showed a decrease of 10,934,000 bushels from that of September, 1921. According to Broomhall's estimate, the world surplus at the first of September was 776,000,000 bushels, and of this amount North America had 488,000,000 bushels.

During the third quarter of the year the Canadian dollar gradually improved its position in New York until late in August when it reached par for the first time since November, 1917. This movement is attributed to a number of factors. The recent flotation of the \$100,000,000 loan in New York was of prime importance, and the greatly improved condition of Canadian trade cannot but have played a vital part. Trade balances in favour of the United States during the latter part of 1921 have turned in favour of the Dominion, owing to the decline in imports from the United States. Another important influence in the situation was the fact that large shipments of Canadian wheat created a demand for Canadian funds, at the same time that the normal movement of coal from the United States to Canada, for this time of the year, was impeded by the American coal strike.

EUROPEAN CONDITIONS.

During recent months there have been unmistakable evidences of a decided improvement

in business and industrial conditions in Great Britain. The labour troubles which seriously handicapped the industrial progress of the nation have practically subsided. The coal strike in the United States has acted as a stimulant to the Welsh coal industry as well as to shipping, on account of the sudden increase of demand for coal both in the United States and Canada, and in those European markets which Britain lost during the coal strike last year. The general improvement is greatly facilitated also by the recent reduction in freight rates which amounts to nearly 25 per cent of the war-time increase.

The outlook in the foreign trade of Great Britain is distinctly more encouraging. During July, exports were £8,000,000 greater than in June, and £16,000,000 in excess of the figure for July 1921, in spite of the lowered price levels. This situation is a result, largely, of the increased activity which exists in various branches of industry. Abundant moisture and fairly satisfactory growing conditions in general have assured a very much better crop than that of 1921. Partly through the efforts of the Government, and partly on account of the improvement in industry, the unemployment situation is much less serious than was the case last winter. Since December, the number of unemployed has been reduced by nearly a third.

In the French situation, too, there are encouraging features. Total exports for the first five months of 1922 amounted to 7,977,000 metric tons in comparison with only a slightly larger figure, 8,337,000 tons, in 1913. As in the case of Great Britain, this is due largely to the improvement in manufacturing, especially of iron and steel products. Pig-iron, which is an accepted index, has increased in output noticeably. During the first five months of this year, there was an increase of 4,387,538 metric tons over the same period of 1921, in imports of raw materials for use in industry; the importation of manufactured goods decreased by a large margin during the same period. In the first seven months of the year, imports reached 28,667,000 tons while exports were only 11,713,000 tons. This unusually large import balance is explained as being due to the purchase of raw materials, indicating increased industrial activity, and to the importation of German coal on account of reparations. It is obviously misleading to read

statistics of reparations payments into the trade balance figures, without drawing attention to the fact, since no payment is to be made in return. Agricultural conditions in France are not particularly encouraging. The wheat yield is estimated much below the bumper crop of last year and it is expected that a large importation of foreign wheat will be necessary. The difficulties of the situation which France faces, and the reason for her insistence on reparations payments, is better understood when it is realized that the full payment of interest charges on all the obligations of the French Government, would require more than two-thirds of her revenue for the current year.

GERMAN SITUATION.

In the German situation there is little justification for optimism. Prices have continued to rise, and so much fluctuation exists in the currency that many of the large retail dealers are said to have resorted to hourly price changes. Wholesale prices in May were 64 times as high as before the war, while, at the beginning of August, they were in the neighbourhood of 100 times as high. Retail prices have risen accordingly. The changes have been so frequent that it has been found necessary to regulate the price of steel and steel products weekly. Some idea of the change that has taken place, is gained from the following table which shows iron product prices, per ton, before the war, and on June 20th and August 1st of this year.

	Pre-War Prices	June 20, 1922 (In marks per ton)	August 1, 1922
Pig-iron	82	7960	14480
Bars	97	10640	19470
Wire	117	11470	20980

During the quarter, the continued issue of paper money has forced the mark from .0023 cents at the beginning of July to about .0005 late in September. The number of marks to the dollar has increased from 4 at the beginning of the war to nearly 2000 at present.

It now seems evident that the currency depreciation cannot be arrested, and that it is only a question of time until the mark becomes valueless. When such a situation occurs all obligations payable in marks, both governmental and private, will have automatically ceased to exist. It is common knowledge that practically all foreign transactions that have been entered into with Germany since the Armistice, as well as a large percentage of the more important internal business, have been effected in foreign currencies, principally in dollars and in sterling,

and at the present time a large volume of such notes are in actual circulation. No one knows how the collapse will be dealt with when it occurs. Probably the use of foreign currency of recognized value will be resorted to in the interval. Gold will gradually come into circulation, to be eventually replaced by a new issue of paper readily redeemable in gold. Assuming that the foregoing is a correct estimate of the existing situation, we may reasonably expect to see Germany entirely freed from her internal liabilities and conducting business on a gold basis at no distant date.

A superficial observation might lead to assume, from the foregoing statements, that money depreciation and its attendant circumstances had been advantageous to Germany. A closer study of the facts, however, impresses one with the realization that the present financial debauch has led to unparalleled social injustices, and to a dissipation of wealth entirely out of proportion to any apparent benefits which may accrue from so easy a liquidation of the nation's debts. It will be seen that the advantage which Germany was thought to have had in consequence of her ability to under-sell her competitors, is easily explained by the fact that her foreign trade was being carried on at an enormous loss and this fact had not been detected on account of the confusion which existed in her monetary system. There is this to be said for the policy which Germany has pursued; she has placed on the present generation the greater part of her share of the cost of the war. The conclusion would seem to be warranted that, while this situation has injured her ability to pay reparations to her late enemies, in the past, it has nevertheless put her in a better position to make restitution, as soon as the present critical situation has been adjusted.

Over 9,000 tons of foreign and Colonial cheese were imported into the United Kingdom in April, according to an official return. Of this quantity 177,000 cwt. was what is known as hard and 5,798 cwt. soft, or fancy, cheese. The largest amount sent here by any individual country was 137,918 cwt., all of the cheddar variety, which came from New Zealand. This was more than three times the combined total of cheese imported from all other parts of the world. Canada sent 13,593 cwt., the Netherlands 12,000 cwt., Queensland 6,981 cwt., Italy 2,843 cwt., Switzerland 2,452 cwt., Denmark 2,451 cwt., Victoria 2,031 cwt., and France 1,328 cwt., Bulgaria and Esthonia each sent one hundredweight.

Trade Notes from America.

New York.—Evidence tending to show that current estimates of the unpaid and overdue indebtedness owed by the outside world to the American market are greatly exaggerated is found in an analysis of recent questionnaire investigations made by Dr. John H. Williams of Harvard University, and printed in the current number of the Journal of the American Bankers' Association.

Some of these estimates have been for as large a sum as \$5,000,000,000. As a result of thorough investigation, Dr. Williams holds that the actual indebtedness of this kind cannot exceed \$1,000,000,000 and that even this sum is mostly offset by American purchases of the securities of other countries.

"The American exporter to-day needs to be convinced that foreign buyers can pay for what they buy," says Dr. Williams. "So long as the statement continues to be repeated that the world owes the United States an unfunded debt of \$3,000,000,000 to \$5,000,000,000, American exporters will continue to be hesitant about pushing their foreign sales. The writer has been for some time convinced that the current short-term indebtedness of the world to the United States, representing unpaid overdue accounts of foreigners which are carried by American bankers and exporters, is much smaller than has been frequently stated. It appears certain that the amount does not exceed a billion dollars, and in all probability is considerably less. If this is the case the existence of such an unfunded balance ought not to constitute a serious obstacle to the promotion of American foreign trade.

"An investigation was based on a questionnaire distributed to forty-one leading banks and financial houses of American imports of securities since the Armistice. This inquiry showed that, in addition to the foreign securities issued in the United States, accurate data on which are regularly published, we imported in the three years 1919-1921, \$620,000,000 of foreign stocks and bonds which had been issued abroad, and \$489,000,000 of American securities formerly held abroad. The combined import of these two sorts of securities, \$1,109,000,000, was about two-thirds as much as the new issues of foreign securities floated on this side in the same three years (\$1,607,000,000), but exceeded the net amount of such flotations after subtracting maturing issues (\$1,341,000,000) by \$763,000,000. This huge inflow of

securities, much larger than had commonly been supposed, would serve to pay off a considerable part of the American balance of merchandise exports and reduce considerably the supposed uncovered balance.

"More direct evidence on the amount of the unfunded balance was given by a questionnaire sent out to the principal domestic banks, private bankers and foreign banks of New York, two large banks of Boston, and the more representative members of the American Manufacturers' Export Association and the Exporters' and Importers' Association, asking them to report the status of their balances with foreign countries.

"The aggregate balance due from all countries on July 1, 1921, to 664 manufacturing and commercial concerns, domestic banks and foreign bank agencies was \$628,000,000 against which the balance due to all countries was \$279,000,000, leaving a net unfunded credit balance of \$349,000,000. Contrary to the impression of many, the returns show that the greater part was due from non-European countries. Balances due from Europe amounted to \$247,000,000, against balances due to Europe of \$162,000,000, giving a net balance due from Europe of \$85,000,000. Balances due to these countries, \$117,000,000, leaving a net balance due from non-European countries of \$264,000,000.

"It is especially interesting to note that the net balance due to the United States pertained entirely to the exporting concerns. Taken as a whole, the reporting banks appear to have had no net balance from abroad.

"In drawing conclusions from this investigation some caution is necessary. A more comprehensive inquiry would have included banks in other cities than New York and Boston. One important group of exporters, the packers, did not report; and their unpaid foreign accounts have undoubtedly been considerable. Those in charge of the investigation, moreover, express some doubt concerning the reliability of the returns of 'balances due to foreign countries,' though stating that 'there seems to be good reason for regarding the figures under the items 'due from foreign countries' as fairly trustworthy, so far as the inquiry was extended.'

"Even after allowing for such defects, however, and for conservatism throwing out entirely the 'balances due to foreign countries,'

the total due, both from Europe and the rest of the world, would be but \$628,000,000, representing the total credits in foreign countries on July 1, 1921, of most of the important New York banks, two of the largest banks of Boston and a large number of representative exporters and manufacturers, including many of the largest firms and corporations in the United States. Even if we double this amount, to allow for the foreign credits of non-reporting banks and firms in other cities, we still have a sum much below most of the estimates that have been made in recent years."

SAFETY METHODS TO MOTOR DRIVERS.

The Safety Institute of America which has been carrying on safety campaign in factories is planning to extend its field to include motor drivers in New York City. Fatalities from motor vehicles at present are between twenty-five and thirty each week in that city, and in 1921 there were 1,081 deaths in the city from such accidents. The institute will establish a school at which drivers of trucks, taxicabs, buses and all commercial vehicles will be taught the fundamentals of safe driving, proper maintenance of motor vehicles, with a view to preventing accidents due to faulty mechanical conditions, and rules of the road.

The psychology of pedestrians, the habits of children at play and co-operation between truck drivers and drivers of passenger cars also will be taken up in the school.

The school will be established immediately after the Safety Week campaign, October 8 to 14. In the meantime, it is planned to organize drivers in individual companies operating large fleets of motor vehicles and to hold mass meetings of drivers in each of the five boroughs of the city. Through these meetings the co-operation of drivers will be sought to pull New York through the week of October 8 to 14 without a single motor vehicle fatality.

It is hoped that in the first year 10,000 of the 100,000 motor vehicle drivers of New York, will be reached, and the institute is prepared, if the demand is sufficient, to provide facilities for the instruction of 20,000 drivers. While the schools are intended primarily for commercial drivers, any private automobile owner or passenger car driver who wishes to take the course will be welcome.

AN EMERGENCY FUEL LAW.

While the American public is waiting anxiously for some federal action to control the price and distribution of coal, a special session of the New York State Legislature has convened, and passed a measure designed to

alleviate if not to cure the situation created by the miners' strike. Under the new measure the Governor of the State is empowered to appoint a Fuel Dictator who will have absolute power over all fuel, except gas and electricity, in the State. He may buy, sell, apportion, and seize when it is hoarded, all coal, coke, charcoal, firewood and fuel oil. He may limit the production of light, heat and power. He may look at the books and fix the maximum prices of the fuel dealers. He may even close the schools if necessity demands.

New York State, which normally burns 4,000,000 tons of anthracite a day for household purposes, must depend on bituminous coal for cooking and for heating houses this winter. As for the industrial plants—recent reports tend to allay fears of an immediate enforced closing.

A NEW INDUSTRIAL MAP OF NEW YORK.

While it is always unwise to draw rash conclusions from apparently striking facts or statistics, without fully knowing the subject under discussion, it is perfectly justifiable to examine such data and point out the possible or even probable deductions that would seem likely to follow from the study. From this standpoint, the map of industrial New York, recently prepared by the Merchants' Association in that city, presents a remarkable subject for thought or discussion, in view of the vastness of the field covered. Its distinguishing marks are its crazy-quilt patchwork of colors painted on in squares, triangles and parallelograms, dovetailing and criss-crossing over the many miles the city covers. Each color represents some great manufacturing industry carried on there. The pattern falls into order as one studies it, and is seen to show graphically just where the \$5,000,000,000 worth of goods that New York turns out each year are produced.

It shows more clearly than a thousand words of explanation how much more Manhattan (the heart of New York) is than a narrow island of palaces, slums, theatres, promenades and colorful shops. It shows that all through this island there are factories of every sort—hidden, many of them, around the corner from streets of amusement or fashion—in which are made everything from hairnets to pianos. There are even thirty-two factories on Manhattan Island engaged solely in the manufacture of button-holes, extraordinary as that product may sound to one not familiar with the phenomena of the garment trade.

The figures which represent New York's

industrial supremacy are staggering. The manufactured products turned out annually in the city, Government statistics show, equal one-twelfth the value of all the goods manufactured in the United States. New York's production is almost half as much again as Chicago's, her nearest competitor, and more than two and a half times that of Philadelphia, which ranks third.

The trade that leads all others in New York is that dealing with wearing apparel, and in this field some of the statistics seem to verge almost upon the fabulous. There are, for example, more than 2,000 concerns in the city manufacturing men's garments, with a total value of their yearly produce reaching close upon \$500,000,000, and some 5,000 concerns engaged in making women's clothing to the value of nearly twice this amount. Almost half the military and lace goods made in the United States are manufactured there, and this industry alone employs about 35,000 individuals and totals an annual value of considerably more than \$150,000,000.

The statistics presented cover various aspects of the situation, and are not entirely devoted to a mere statement of quantities and amounts. Some of them are distinctly illuminating. For example, the average wage of the ordinary manual worker is less than \$1,500, while the average amount that the efforts of each such wage earner contributes to the goods he or she handles is more than \$3,750.

It is not a surprise with all these facilities that New York should also excel as a great market, but this is another story. Suffice it that goods mounting into the billions are sold in the stores of New York each year, and that within the fifty miles surrounding the city there are congregated almost a tenth of the population of the entire United States. About 46,000,000 people were brought into New York over the railroads during 1921, a startling figure when it is remembered that this means that each day there must have arrived a populace large enough to constitute a remarkably good-sized city.

FIGURES FOR THE AMERICAN COTTON YEAR.

The Census Bureau reports that consumption of cotton in the United States during the cotton year—August 1, 1921 to July 31, 1922—exceeded that of the year 1920-21 by more than a million bales, but was half a million bales below 1919-20. United States consump-

tion was 28.9 per cent of the world's production compared with 28.6 per cent for 1920-21.

The carry-over of cotton on July 31 this year was 2,828,186 bales compared with 6,534,360 bales a year ago and 3,563,162 bales two years ago.

The world's production of commercial cotton, exclusive of linters, grown in 1921 was approximately 15,197,000 bales of 478 pounds of lint, while world consumption was approximately 16,914,000 bales of 478 pounds of lint, says the same authority. American consumption for the year was 5,911,914 bales, exclusive of linters, which exceeded that of the year 1920-21 by more than a million bales, but was half a million bales below 1919-20.

Based on the average consumption for the last year, the mill stocks, 1,215,103 bales, will meet the consumptive requirements of the domestic mills for ten weeks, the Census Bureau announces.

NEW YORK'S MERCHANDISE FAIR.

The idea of the great National Merchandise Fair, with its 673 exhibits, which took place in New York in August was taken from the thirty or forty fairs maintained for many years in Europe, notably the mart at Leipzig, which has been conducted for centuries, and the national fair at Nizhni-Novgorod, in Russia, where, before the revolution, 400,000 buyers gathered annually to purchase as much as \$65,000,000 worth of goods.

One of the features of the fair was the number of foreign buyers present. These were in the United States, not especially to visit the fair, but, being there thought it worth while to pay the fair a visit. The result is that merchants in such foreign cities as London, Alexandria, Kobe, Amsterdam and Rotterdam, Sydney, Honduras, Central America, Shanghai, and Buenos Aires will have more complete stocks of American merchandise on their counters next year.

In order to make this fair the outstanding national merchandise event of each season it is probable that the national merchandise fair of the future will be an incorporated project, with subsidiary companies, and that the shareholders be those properly organized national retail associations and national wholesale associations interested in the simplifying of the over-complex merchandising problems of the United States.

Increasing Agricultural Production.

A Madras Government Order says:—In G. O. No. 1063, Revenue, dated 7th May 1920, the Government suggested certain measures with a view to increasing the production of both food and industrial crops and requested the Board of Revenue to issue the necessary instructions to Collectors and to offer further suggestions, if any, in consultation with the officers of the departments concerned. With its proceedings read above, the Board submits its final report after a careful consideration of the reports received from the Collectors and other officers. The several points raised therein are dealt with seriatim below.

The Board reports that the predominant reasons for this state of affairs are—

(1) that land is not always taken on patta purely for the object of cultivation but frequently for grazing; and

(2) that a very large area of uncultivated land in poorer districts is unfit for continuous cultivation on account of factors mainly climatic and economical. The Board considers that it may be safely left to the individual ryot to decide what area he can and what he cannot profitably cultivate. While the Government agree in the main with the Board in the reasons it gives for the non-cultivation of this large area, they consider however that by exertion on the part of district officials, by appropriate State aid if possible in particular cases and by the formation of Co-operative societies for bringing in such areas under cultivation a great deal may be done in reducing the area of uncultivated land.

The Board reports that the bulk of this area is of very doubtful fitness for cultivation. The Government are prepared to accept that there is a great deal of truth in the remark of the Board, but they consider that there are still large tracts of unassessed land fit for cultivation purposes provided facilities are created by the opening up of communications so as to induce ryots to take up for cultivation a good portion of this uncultivated area. While the Government are pleased to note that every endeavour is being made to encourage the depressed classes to take up more land, they consider that in suitable localities after reserving reasonable areas for the depressed classes, land may be given to members of other communities who may be expected to invest the requisite capital to bring virgin soil under cultivation. They also consider that where-

ever possible co-operative societies should be organized and encouraged to take up waste land with a view to bring it under cultivation.

The Board observes that assignment has not kept pace with disafforestation and that it is useless to continue to disafforest land until the area now available is assigned. The Government agree with the Board and the Chief Conservator of Forests that disafforestation should not be hurried except in cases where there is a real demand for land for cultivation. The Government would however invite the attention of the Board to the fact that the Chief Conservator of Forests considers that in South Arcot, Trichinopoly, North Arcot and to a small extent in Tinnevely there is still scope for disafforestation. The Government desire that the subject should be further enquired into. Where slow occupation is found to be due to causes other than survey difficulties, the Board of Revenue is requested to suggest remedial measures to accelerate occupation. The Government would like to know if there are any disafforested areas for which there is demand by ryots for assignment, but which could not be assigned for want of survey. The Government would also like to know if there are any disafforested surveyed areas which could not be taken up by people owing to their inability to pay the cost of trees thereon as calculated under existing rates and if so whether the grant of concessions permissible under the revised Board's Standing Order No. 15 will induce them to take up such lands.

The Government generally agree with the conclusions of the Board of Revenue. The Agricultural Department has been doing its best to increase intensive cultivation not only by popularizing manures but also by supplying seeds by producing new varieties of strains and by combating diseases and pests.

The Board of Revenue remarks that it does not believe that there is really a shortage of labour. It however agrees with Collectors that assignments of large extents of land on favourable terms will be an inducement to those who can afford and are willing to use labour-saving devices and is prepared to accept such terms as the Agricultural Department may advise. But it does not think that it is feasible to ensure the use of such appliances by making their use a condition of grants. The Government wish to emphasize the

importance of pressing the use of special appliances as a condition precedent to such grants wherever possible. They consider that practical steps should be taken to enlist the aid of agricultural or co-operative societies, or private persons, who can invest capital, in the extension of cultivation to lands which it is beyond the power of the ordinary ryot to bring under the plough and that the use of up-to-date appliances might be encouraged by giving preference to those applicants who are ready and willing to employ them. There are for example several agricultural societies which already undertake the joint purchase and sale of members' produce and purchase costly appliances which they lend to their members and which may well be encouraged by the grant of land on favourable terms. The rules for the grant of such concessions might follow, *mutatis mutandis*, the rules embodied in Board's Standing Order No. 19-A relating to the grant of lands for cattle or dairy farms. The Board is requested to prepare in consultation with the Director of Agriculture, the Registrar of Co-operative Societies and the Commissioner of Labour a set of suitable rules for the approval of the Government which, when adopted, should be widely published. The mere publication, however, of such concessions is likely to be infructuous, and the Board should in due course see that Collectors take the initiative after careful local inquiry in formulating specific schemes and encouraging local enterprise in this direction. The Director of Agriculture

and the Registrar of Co-operative Societies and the Commissioner of Labour will also see that their staffs co-operate in the matter, both by advising and by themselves taking the initiative in proposing through the Collector schemes for the advancement of the object in view.

The Board of Revenue considers that the policy in regard to extension of wet cultivation has been far too cautious and conservative. The Government are unable to agree with the Board. The supply of water in the irrigation sources is not unlimited and the ayacut must necessarily be determined with reference to the supply available and the carrying capacity of channels. The Government are of opinion that better results can be achieved by concentrated supply than by a diffused supply, under which irrigation would become precarious and that from the point of view of *production* it is preferable to give an assured supply to a smaller area than an uncertain supply to a larger area. They however consider that there is scope for extension of irrigation under the Godavari delta. Extensions up to the limit of the ultimate ayacut will be welcomed. The Board of Revenue is requested to issue the necessary instructions. The Government consider that the proposal to create a special staff to popularize loans for well-sinking is worth consideration. But before doing so, they should like to know the opinion of the Director of Agriculture and of the Registrar of Co-operative Societies if either of their departments could undertake the work.

Nottingham Lace.

The staple industry of Nottingham—the lace trade—is in a serious condition and the future is regarded as almost hopeless. These fears are based on the fact that the new foreign tariffs have hit the trade heavily, and it would appear that the United States and France have practically prohibited lace from entering those countries.

We are, however, informed by a representative of a leading New York financial house that Nottingham lace is still in favour in the United States. He suggests that not only should representatives of the trade, preferably principals, go over there instead of waiting for the buyers to come here, but that the city's products should be plainly marked "Made in Nottingham, England," when he has no doubt

good business could be done notwithstanding the increased tariff.

It is also stated that a patent has been registered for adapting lace machines at a small cost for the making of blankets and turkish towelling. If there is anything in the idea it would help the lace trade in the difficult times through which it is passing and find work for many of the unemployed. It would certainly seem desirable for immediate steps to be taken to see if something tangible can be done in this direction.

It is to be hoped that these efforts of the Borough Development Committee will be noted in Mysore and our trades here take advantage of these latest improvements.



Views and Comments.

BY "ECONOMICUS".



In one of his recent lectures Dr. Rabindranath Tagore brings out clearly the close relation that should exist between economic life and culture. "Our centre of culture should not only be the centre of intellectual life but the centre of her economic life also. It must co-operate with the village round it, cultivate land, breed cattle, spin cloths, press oil from oil-seeds; it must produce all the necessities, devising the best means, using the best materials, and calling science to its aid.... This will give us a practical industrial training whose motive force is not the greed of profit." We would like to see several such Universities in different parts of India.

* * *

Addressing the shareholders of the Scindia Steam Navigation Company, Mr. Narotham Morarji, Chairman of the Board of Directors, spoke of the twofold difficulties against which the Company had to fight, i.e., positive discouragement on the part of the Government and strong and continuous fight on the part of vested interest. We have no details about Government opposition, but Indians must recognize the historical fact that the stability of the British Government in India depends on Britain's control of the Indian Ocean and the decay of the indigenous Indian shipping is the price we have to pay, at least in the present stage of transmission, for the benefits of British rule. This at least is the *British* point of view.

* * *

Touching the question of provision of adequate railway facilities to meet the industrial demands of the country, Mr. Magniac held that the solution lay both in the increase of capital outlay and simultaneous *provision of necessary funds from revenue* (italics ours). He thought that the attitude of economy in revenue expenditure was likely to prove in the end an expensive experiment. Here Mr. Magniac speaks with the insight and authority of a practical businessman. We cannot condemn too strongly the attitude of the State in recent years which regards the Railway as a kind of milch cow whose income or revenue should go to swell the coffers of the State even to the point of collapse of the Railway system and then tries to "rehabilitate" it by loans in the foreign market.

During the course of his address to the Mysore Representative Assembly on October, 2nd, Mr. A. R. Banerjee, the Dewan, said that as a result of his tours he formed the opinion that the economic condition of the poorer classes of agriculturists was not satisfactory and that he had now become convinced of the necessity for a detailed economic survey into their condition. Dr. Harold Mann has established the same view as regards the Bombay Presidency, while the present writer, as result of his own inquiries and observations, has come to the conclusion that it is the case in the West Coast. The problem of agricultural poverty seems to be an all-India one. We look forward with interest to the labours of the Committee of Inquiry promised by Mr. Banerjee on behalf of the Mysore Government.

* * *

Referring to the difficulty to foresee the general traffic situation and the results of enhanced goods rates, General Magniac expressed the view that "if continental exchanges took a favourable turn, considerable development of trade would result; but unfortunately the European situation made it difficult to anticipate any important development in overseas trade for some time to come." We hold this to be a weakness in our railway system, the tendency to base its prosperity on the progress of our *foreign* trade. There is no doubt that our railway system was designed, and is being worked, on this very basis. We know that railways alone cannot create new industries within the borders of India, but a system that takes an *Indian* point of view in these matters can do a good deal to facilitate interprovincial movement of goods and give encouragement to indigenous industries at suitable centres.

* * *

Presiding over the Railway Conference at Simla, on October 9, General Magniac, Agent, M. S. M. Railway, put in a vigorous plea in favour of company management, even discounting the importance of a Board of Directors domiciled in India as advocated by some members of the Acworth Committee. He said: "Difficulty in finding the required type of Directors at all Railway Headquarters has been underestimated. Railway requirements

demand a more elastic system of finance and relaxation of Government control. A Railway Company should be permitted to be master in its own house." Now, Mr. Magniac, the employee of a Private Company, cannot be expected to be untrue to his salt, but the principles he enunciates cannot gain general acceptance. An elastic system of railway finance is unexceptionable in principle, but everything depends on what the Company wants to do with the freedom. If Government control is rightly exercised, as it ought to be, it safeguards the interests of the community as a whole when the particular interests of the Company come into conflict with them as they often do. Without minimizing the difficulty of getting suitable Directors in India, we hold that it is not impossible, but we feel that there is an incongruity in asking a body of Directors domiciled in India to safeguard the interests of shareholders domiciled elsewhere; private capital investment in Indian Railways is almost wholly foreign and in sterling.

* * *

The views recently expressed by our premier commercial and industrial bodies on State *versus* Company Management are, as usual, interesting as revealing the racial factor that determines so many of our economic and political problems. The European Chambers of Commerce, without exception, favour the Company management, while the Indian Chambers of Commerce vote for management by the State. The reason is not far to seek. The Indians believe, rightly or wrongly, that the present Company management favours unduly European mercantile interests and has not done all it can to promote the best interests of India and Indians. Between a bureaucracy domiciled in England and the bureaucracy of the Indian Government, the Indians believe that the latter will be more amenable to public opinion. The other alternative is to hand over the Railways to Indian Syndicates, but the absence of well-organized private bodies able to cope with the vast and intricate problems of Railway policy as well as financial and political difficulties make it impossible to adopt such a course in the near future.

* * *

The British papers are full of dolorous cries over the recent recommendations of the Indian Fiscal Commission. The *Financial News* publishes an interview with Sir Charles Hobhouse, Chairman of the Commercial Corporation of London. His views are typical. He believes that the effects will be serious upon British

trade and industry if India embraces a protectionist policy and the consequences to India also will be disastrous. As to the effects on India, Sir Charles Hobson says:—"As in other countries, India consists broadly of two sections—consuming India and manufacturing India—and in point of numbers, consuming India preponderates vastly. . . . The population of India is an illiterate mass, and though you may get men fit to work in factories, you cannot get a population to direct factories until these are evolved gradually through generations of technical training and experience. Thus however much Indian manufacturers may be protected by tariffs, they cannot hope to supply local needs to any appreciable extent for many years to come. And as the requirements of consumers will remain, it is evident that they must be supplied by imported goods whose cost is increased by a heavy tariff. This in its turn will gradually result in an all-round rise in the price of similar commodities, and as the benefits of higher wages will have been felt only by the strictly limited number of men employed in the protected industries, the purchasing power of the vast mass of the community will decrease, as much to their own discomfort as to the disadvantage of exporting countries such as Great Britain." In reply it may be said: (1) The sharp distinction between the producer and the consumer is not tenable; the producer is a consumer and the consumer is a producer; in the broadest sense, consuming India is equal to the producing India. If by "consuming India" Sir Hobson means 'non-manufacturing India,' the case is different, but the aim of the Commission is to ensure a due proportion between both. (2) The Commission does not say anywhere that tariffs alone will create an industrial India, but the adoption of their proposals is one of the necessary conditions. (3) The Commission nowhere recommends a heavy tariff on all imported goods or on some goods for all time, so that the rise of price alluded to is more imaginary than real. We may say in conclusion that what India should aim is not the unnatural bolstering up of unfit industries to the detriment of the consumers and the profits of monopolists, but to utilize the tariff to nip in the bud unfair competition of foreign producers upon nascent industries and thus create an atmosphere of security. The Fiscal Commission, as far as we can see, does no more than this. The economic arguments of Sir Charles Hobson are beside the point as far as the aims and recommendations of the *Fiscal Commission* are concerned,

Economic Notes.

INDUSTRIAL, AGRICULTURAL, EDUCATIONAL AND GENERAL.

The Bombay Government have decided that in admitting students to the Grant Medical College preference should be given to students of Bombay Presidency who are eligible for admission.

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Professor Peake, addressing the Anthropological section, suggested that civilization was endangered particularly owing to the alienation of the peoples of Asia and the Near East. He advocated the removal of ill-feeling by the sympathetic study of one another's culture.

* * *

The Imperial mineral resources Bureau has been informed by the Geological Survey of India that the quantity of gold extracted from the mines in India during the months of April and May 1922 amounted to 35,583 oz., valued at Rs. 24,20,884 and 36,120 oz., valued at Rs. 23,42,277 respectively.

* * *

The Madras Government have sanctioned the distribution of Rs. 27,63,000 among the District Educational Councils for payment of grants-in-aid in 1922-23 as detailed below:—Teaching grants Rs. 27,05,000; Building grants Rs. 48,500; Furniture and other grants Rs. 9,500; Total Rs. 27,63,000.

* * *

The Madras Government have ordered that cinchona febrifuge manufactured at the Government Cinchona Factory at Naduvattam may be sold to the public in original cases of 20 lbs. each. No person or firm will be supplied with more than five cases. The price to be charged will be that fixed by Government from time to time.

* * *

According to a report recently made before the Society of Dyres and Colourists in Leeds, allyl alcohol has been synthesised successfully in the laboratory, and the indications are that its commercial manufacture in accordance with this process may be undertaken. The importance of this alcohol lies in the fact that glycerine may be made from it very easily, with a good yield and on an industrial scale.

The Mayor of New York announces a £120,000,000 scheme for a municipally owned and operated tube railway system of 237 miles, including thirty-five new routes. The construction will take fifteen years. The scheme contemplates a 2½d. fare for all, with free transfers, and links up with the Mayor's proposed municipal omnibus plan. It also contemplates the "recapture" of the existing tubes, if legally possible.

* * *

Dr. Marion Newbigin, editor of the *Scottish Geographical Magazine*, in the course of his Presidential address in the British Association declared that the centres of West European civilization to-day were trembling shocks emanating from the East similar to the disturbances on the borders of the later Roman Empire; therefore, it was intelligible that some people to-day believed that the focus of civilization was again changing and the predominance of North-Western Europe was ending.

* * *

An official report relating to Post Office Life Assurance in Japan in 1920 has recently been issued, and is of interest as showing the result of the attempt by the Japanese Government to carry on the business of industrial life assurance. Japanese Post Office Life Insurance has apparently been carried on since 1916. The premiums are payable monthly and are collected by postmen, or may be paid directly to any post office. The insurance appears to be non-participating. The business has shown rapid growth, for whereas in 1916 the number of policies issued was 261,469 assuring 24,508,560 yen., in 1920 the policies issued numbered 2,221,305 for sums assured of 224,514,316 yen. In the same period the insurance fund rose from 296,095 yen. to 14,713,247 yen. About 45 per cent of the policies in force are on the endowment plan, and 65 per cent are on male lives. Expenses in 1920 were apparently at the rate of 26.2 per cent, and the death claims were 15.6 per cent of the premiums received. An interesting item in the report is that the society's investments include 20,000 yen in "Loans for Public Pawnshop Funds."

A note from the Greek Minister of National Economy (reported by the United States Consul-General at Athens) states that the collection of rosin from trees begins in Greece in May and lasts until September. The distilleries operate from June to March or April. The annual production of colophonium is about 4,000 tons, and of turpentine, 1,000 tons.

* * *

With the previous approval of the Government of India the Government of Madras have sanctioned the grant, subject to certain conditions, to Messrs. Alfred Dickinson and R. D. Richards on behalf of a syndicate formed of the abovementioned gentlemen and Messrs. Balfour Beatty & Co., Ltd., and the General Electric Co., Ltd., London, of a concession to make use of the water in the Pykara and Avarai Halla rivers in the Nilgiris district for the generation of electric energy for industrial purposes.

* * *

Passports for New Zealand will be granted to the following classes of persons who are not of British birth and parentage desiring to proceed there:—(i) Holders of permits issued by the New Zealand Government under section 5 or 8 of the Immigration Restriction Amendment Act, 1920. (ii) Wives, families and servants included in such permits. (iii) Visitors only for the purpose of business, pleasure or health and the wives, families and servants of such persons. (iv) Former residents who are in possession of unexpired certificates of registration obtained before their departure from the Colony. (v) Persons who are certified by the Chief Presidency Magistrate in a Presidency town, the Political Officer in an Indian State, or the District Magistrates elsewhere to be the wife and children of Indians and domiciled in the Colony or produce proof of a permanent monogamous marriage, and who hold a permit issued in New Zealand authorizing the husbands or fathers of such persons to bring in wife and children.

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Notes by Mr. C. E. C. Fischer, I. F. S., on *Santalum album* in the Chittoor District, show that after 20 months of isolation the saplings are quite healthy and show no signs whatever of spike. This, Mr. K. Govinda Menon, Conservator of Forests at Trichoor, observes in the *Indian Forester*, throws a serious doubt on the parasitic habit of sandal. One of three plants which he has under observation is now six years old, and is growing quite isolated.

It is never watered too. It is true, he says, that the roots of sandalwood plants show haustorial attachments with other roots when there are any close by, and so might many other forest trees if examined. But is the parasitism of sandal obligatory? Till this matter is proved one way or the other, a halt should be cried before we accept any theory finally, as the possible cause of "Spike." If sandal is not an obligatory parasite, but only one indulging in a luxury, the theory of the unbalanced circulation of sap has to be revised. The ultra-microscopic germ theory as the cause of "spike" has also been questioned by Mr. P. M. Lushington. Mr. Menon thinks that all observations made so far tend to show that "spike" is of a pathological nature induced in the plant by some ecological or climatic or meteorological agency which the vitality of the plant is not able to fight and get over.

* * *

The Italo-English mint is cultivated to the extent of about 600 hectares (1,482 acres) in Piedmont. Calabria and Sicily furnish the "Esperidee" (Lemon, bergamot, sweet and bitter orange, mandarin, citron, etc.), the peel of which furnishes high grade essential oils, constituting a leading industry of that region, which is only slightly less important than the production of citrate of lime and citric acid, obtained from lemon juice. Lavender, herbs, and plants are plentiful in the Western Alps; resinous plants are found in Alto Adige, in north-eastern Italy; rosemary, thyme, juniper, absinthe, and many other herbs and plants abound in Sardinia; aniseed and fennel are raised in Romagna; and the rose, carnation, violet, and other flowers are grown along the Ligurian Riviera. These essences are not only indispensable in the preparation of perfumes, liqueurs, confectionery, etc., but are largely used in pharmaceutical preparations. One firm, says the United States Consul at Genoa, has succeeded in producing from the Brunner rose of the Riviera, an essence of which 20 kilos was sold in 1919, the first year of its appearance on the market. In order to obtain 1 kilo of this oil about 5,500 kilos of petals, with an approximate value of 4,200 liras per kilo, are used. The Italian Government, by the decree of November 17th, 1918, exempts for a period of 10 years from the land tax and income tax, lands which are given over to the cultivation of flowers, plants, and aromatic herbs for distillation. This exemption will also be extended for a period of five years to factories which produce essential oils.

Great Britain is making a big effort to repair the damage done to her forests by the Canadian forestry troops. The work of re-afforestation is making steady headway, under the auspices of the Forestry Commission, which was established in 1919. In the first year of work, 1,600 acres were planted; in the following year 6,000 acres were added, whilst the present year will probably see the total brought to 16,000 acres. The commission intends to plant 150,000 acres of state land in ten years and to assist local authorities and private landowners to plant a further 110,000 acres. This will put Britain once again into its pre-war position with regard to timber. It has been estimated that \$1,000,000,000 might have been saved during the war had this policy been adopted during the previous half century.

* * *

A Madras Government Order, dated 6th October, says:—On a consideration of the remarks of the Board of Agriculture, 1922, on the subject of demarcation of functions between the Agricultural and Industries departments, the Government asked the Director of Agriculture to report in consultation with the Director of Industries about the advisability of the transfer of sericultural work now carried on in this Presidency by the sericultural expert under the control of the Director of Agriculture. The Director of Agriculture has now submitted proposals recommending the transfer of work to the Industries department. The Government agree with Director of Agriculture; the entire work including the control of the industry and the actual supervision of mulberry growing and silk farms will be transferred to the department of Industries with effect from 1st October 1922; the Agricultural Department will act in an advisory capacity and the services of its officers will always be available for the Industries Department for consultation regarding cultivation of mulberry both as regards the development of new areas and the maintenance of the existing gardens and the control of diseases affecting the crop. The sericultural expert will be given a pay of Rs. 425 per mensem from 3rd October 1922. He will in future be designated as "Sericultural assistant" and will work under the immediate control of the Textile Expert. The sub-assistant employed at the Coonoor silk farm will continue to be borne on the Agricultural department cadre but will work in the industries department.

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International Review of Agricultural Economics, July-August, 1922. Canada:—Co-operation for the marketing of Agricultural produce and the supply of farm requisites.

September, 1922.

The Madras Bulletin of Co-operation. Central Banks:—By M.R. Ry. Rao Bahadur A. Vedachala Iyer, B.A.

Bengal Agricultural Journal.—How to estimate Cost of Production in Agriculture:—By T. N. Roy.

Journal of The Indian Economic Society. The Madura Gilds—A type:—By K. R. R. Sastry.

October, 1922.

The Educational Review. Co-education—Critical:—By Mr. K. H. Kelkar, M.A.

The Social Service Quarterly. Social Service in Europe:—By Dr. Sumant B. Mehta, M.B., Ch.B.

The Madras Bulletin of Co-operation. (a) Co-operative Life Insurance:—By Mr. Keshava Prasad C. Desai. (b) A note on the Life.

Insurance Scheme:—By Rao Bahadur A. Vedachalaiyar.

The Bengal, Bihar, and Orissa Co-operative Journal. Promotion of Co-operative Societies among Industrial Workers:—By N. K. Ray.

November, 1922.

Perfumery and Essential Oil Record. The French Perfume Flower Industry. Co-operation in the Bulgarian Rose Industry.

The Vedic Magazine. What is wrong with Education—By Prof. T. L. Vaswani.

December, 1922.

The Young Men of India. The Personal Finance of Indian Students in Britain.



From Our Readers.



INDIAN PROSPERITY.

Mr. Subbarama Iyer, M.A., Dip. Econ., writes to us :—In the series of excellent articles that are being published in the *Mysore Economic Journal* on “Indian Prosperity” by Sir Alfred Chatterton, many practical suggestions for our economic improvement are given, but some of his remarks do not commend themselves to us. Referring to the present agitation in favour of hand-spinning and the use of *Khadder* cloth, Sir Chatterton has the following :—“The substitution of machine for hand-spinning was the first of the many modern inventions which has so enormously reduced the burden of increasing toil to secure the necessities of civilized existence which was the lot of both men and women from the earliest ages. The *Charka* and *Khaddar* cloth are in themselves only of importance as symbols of an intense reactionary movement headed by men incompetent to guide and careless of their country’s future. . . . Extinguish modern industrialism—revert to the conditions of the 17th century—and of necessity you must go back to the population of that time, for no more will the land then support. That is, two-thirds or 200 millions are doomed to extinction if the effort succeeds.” Now, the use of machinery in spinning and weaving does not, in our opinion, reduce the burden of increasing toil, but only transfers it to another plane. Large numbers huddled together inside a factory often under insanitary conditions, the hellish noise the machines produce during working hours, the concentration of labour, slump and weakening of home-life and all that it involves—one who observes these and similar conditions of work and wages cannot be over-sanguine about the capacity of machinery to reduce the burden of increasing toil. Secondly, it seems to us that the “dispersion” of a most important industry, if it can be effected in India, is quite welcome to the rural classes as providing a supplementary occupation and retaining for the present the rural resources which would otherwise be frittered away in buying the necessities from abroad. Thirdly, Sir Alfred’s remark about the diminution of population, if the effort succeeds, is not clear. It is true of England at present that if the modern industrial condi-

tions are extinguished the population must decrease perhaps in the proportion that Sir Alfred suggests, but in India we do not see much difference between the 17th century conditions and the present except for a few large organized industries established in a few cities and the complete dependence of our population for many a necessity of life on the labourers of other countries. The first does indeed provide work for about 20 to 25 lakhs of Indian workmen, but it is an exaggeration to say that the population of the 17th century was about one-third of the present.

We do not know whether Sir Alfred will regard Sir P. Theagaroya Chettiar of Madras as a reactionary, but there is no doubt that he is a man of ripe experience in industrial matters. Presiding over the anniversary address of the Indian Economic Association on October, 9th, Sir Theagaroya Chettiar spoke as follows on the *Charka* :—“If some improvements in the *Charka* are made so as to turn out at least three times the quantity of yarn it is now possible to produce, I say *Charka* will be a very successful industry; it would be very useful indeed especially to the ryots who have no work for six months in the year.” We endorse this view.

We think that Sir Alfred is again exaggerating when he says (in the article referred to) that “what above all is wanted for agricultural improvement is a simple and reliable motive power to replace cattle.” We do not minimize the industrial possibilities of mechanical power in India, but any extensive use of it, in place of cattle, will have the effect of concentrating the engineering industry in England (in the present circumstances of our country), while the use of cattle, from its very nature, will effect a *dispersion* of a subsidiary industry of some importance. We are of opinion that the use of mechanical appliances, except in a very few agricultural processes, is uneconomical in the present stage of our agricultural and industrial progress.

That the opinion here expressed by Sir Alfred is gaining credence in official circles is proved by the following A. P. I. message, dated 9th October :—“With a view to devise

ways and means of extending iron ploughs and other mechanical implements for agriculturists in the Presidency of Bombay in order to increase production and save human and animal labour (italics ours), the Bombay Government appointed a committee under the Chairmanship of Mr. E. D. Bell, Director of Industries. In their Report the Committee pay special attention to the question of improvement of ploughs and urge for the efficacy of threshing machines for jowar and paddy, implements for effectively ploughing rice-fields, planting rice and digging cotton stubbles. Propaganda to this effect should be carried on by the Agricultural Department in conjunction with Co-operative Department." We are informed that the Government have accepted the Committee's recommendations. The iron ploughs and other mechanical implements may indeed save human and animal labour in one sense, but we are not sure whether they will increase production. Prof. Gide of France is a keen economic observer and he

writes in his "Political Economy" that "the effect of most machines in the agricultural industry is to accelerate labour, not to increase the quantity of articles produced" (page 84). Again, to say that the use of such implements saves human labour is not wholly true, for the manufacture of such machines themselves absorbs a large portion of labour who must strictly be regarded as agriculturists. There is such a necessity for division of labour and introduction of labour-saving appliances in such highly advanced industrialized countries like England and the United States where the keen competition in the machine and manufacturing industries absorb rural labour because of their regular conditions of work and higher wages, but we doubt whether the main problem in our rural areas is to save human labour. We hold, on the other hand, that the problem to-day is to give work to labour which would otherwise have to emigrate to cities or foreign countries where the prospects of getting work are very gloomy indeed.

Cultivation of Railway Waste Lands in Madras.

A Madras Govt. Order dated 31st August 1922 says:—As a result of the abnormal conditions brought about by the Great European War, the Government in their Proceedings No. 1534, Revenue (Special), dated 12th August 1919, permitted under certain conditions, for a period of three years from the 1st July 1919, the cultivation of the waste lands classified as railway poramboke in the Madras Presidency with a view to stimulate the production of food-stuffs. The period of three years expired on 1st July 1922.

The Agent, South Indian Railway Company, Limited, now represents that the cultivation of the waste lands so far undertaken has been of an experimental nature, and that a fair yield of any sort can be expected only after some years. He adds that it is not possible to recoup even the incidental expenditure incurred in bringing these waste lands under cultivation within the three years and accordingly recommends that the cultivation of railway waste lands may be allowed to continue without any restriction, especially in view of the fact that the food supply situation has not materially improved.

The Government have carefully examined the question and consider that, though the conditions brought about by the war no longer exist, there is some force in the representations of the Agent, South Indian Railway Company,

Limited. They are however not prepared to accept the recommendation of the Agent, as it stands, without examining the question further as to whether the people have really taken advantage of the concession and brought appreciable extents of land under cultivation. In the meantime, the Government are pleased to extend the concession of cultivating the railway waste lands for another two years from 1st July 1922 only in respect of such lands as have already been brought under cultivation.

The Scientific American in its June number refers to the use made of ashes and sawdust by Dr. Christian Jaegar in obtaining a chemical substance which is a substitute for cardboard and wood. To ashes (of any substance) and sawdust (of any wood) chemicals are added; the whole mixture is worked together thoroughly and rubbed by hand through a large sieve; and the resulting rather coarse, dry powder is then ready for the presses. The powder is inserted in little boxes under the presses; the presses are lowered for a period of about three minutes; the powder bakes like bread; the presses are lifted and out comes the boxes. The finished boxes are light in weight, washable and sanitary. They are waterproof and fireproof and can be made of any degree of flexibility.



Leaders in Finance and Industries.



CHARACTER SKETCH OF THE MONTH.

Mr. BONAR LAW.

Mr. E. T. Raymond writes in his "Uncensored Celebrities":—

The ex-Kaiser once called his ally Francis Joseph an "incomparable second."

The same phrase might well be bestowed, in no spirit of disparagement, on the retired Leader of the House of Commons. Mr. Bonar Law has sometimes seemed incomparable. But he has never seemed other than a second.

From the first to the last he suggested some thing temporary and even accidental, and even when he acted a principal part it was difficult to get rid of the notion of an extremely competent understudy. How much of this impression was derivable from the circumstances of his political career, how much it proceeded from his own character, it is not necessary to speculate. But certain it is that in a career of some 20 years this eminent man by no means lacking in courage and decision, and placed in a position always of great and sometimes of quite appalling responsibility, has always given the idea of occupying a secondary position.

Or, if that way of putting it might savour of injustice, shall we say that at each stage of his career he has walked in the shadow, while the limelight has happened to centre on another figure, not necessarily more important but certainly more dramatic? It was so from the first.

FAVOURITE OF MR. CHAMBERLAIN.

Mr. Law had just emerged from the obscurity of a private member when the great Tariff Reform tempest broke. He was then, though a Conservative, and not a Liberal Unionist, a special favourite of Joseph Chamberlain, who had quickly discerned his special talents, so useful as supplementing Mr. Chamberlain's own.

If there was one thing Mr. Chamberlain lacked, it was command of the technical side of the great and complex problem involved. He could declaim that silk was gone, that cotton was going, that wool's turn would come. He could ask with passion if we were going to take all this lying down? All that side of the business he could do to perfection. But

when he strayed into figures, if only 'used as illustrations' he immediately got into difficulties.

Now it was just in these matters that Mr. Bonar Law excelled. A business man, with some considerable knowledge besides, of theoretical economics, he could answer Free Trade criticisms, he could put powers of his own, and, with all this scientific equipment, he possessed the fury and enthusiasm of a crusader. For he drew his inspiration from a land where high protection is not considered a matter of debate, so much advantage on this side, so much disadvantage on that. In Canada, where he was born, he was, like his friend Lord Beaverbrook, the son of a Scottish Minister, settled in New Brunswick—Protection was simply another name for common sense.

There was always plenty of enthusiasm among the Tariff Reformers. Clearness of head was not (perhaps) so common. The union of enthusiasm with clearness of head quickly made Mr. Law one of the most trusted of Mr. Chamberlain's lieutenants.

Thus Mr. Law was early apprenticed to his occupation of "incomparable second." On his side there was no more valued speaker, and yet he did not quite suggest even what the Roman Catholics call "Papabile"—capable of being, Pope.

Tariff Reform momentarily faded, or merged into the fierce battle of the Budget, and again Mr. Law, strenuous fighter though he was, was overshadowed by the Die Hards who gathered round the standard of that 'antique bantam of the fighting breed,' the venerable Lord Halsbury, who, at an age when most men are condemned to toast and water at the chimney corner, declared 'war to the knife and fork.'

The two elections of 1910 were lost and won; the forfeit was paid in the shape of the Parliament Act; Mr. Balfour, though aware of no "petrefaction" in his faculties, deemed it time to relinquish a leadership he had held for 20 years. In other words, he anticipated the bowstring by an act of political self-slaughter.

LEADERSHIP OF THE PARTY.

The singularity of Mr. Law's destiny was now again illustrated. An immediate question arose as to the almost equal claims of two men to the vacant leadership. Mr. Walter Long represented the mass of the Tory party. Mr. Chamberlain, as the heir of his father, and as the professor of certain qualifications which Mr. Long perhaps lacked, could not be ignored. There was the danger of a split party, and that in the face of perils of no ordinary kind.

With great magnanimity, both Mr. Long and Mr. Chamberlain agreed to waive their pretensions in favour of Mr. Law, who was thus, by a papal choice, left in command—he, an ex-Glasgow iron merchant, Scottish-bred, Canadian born, Presbyterian, tee-total, landless—of the party, of the Church, the land, and the trade. But only in limited command Mr. Balfour had been leader of the party as a whole. To Mr. Law was assigned the leadership of the House of Commons, while Lord Lansdowne was understood to exercise an equal sway as leader in the Lords over the party at large.

Mr. Law was so unfortunate as to let his rather uncertain sense of humour, accentuate at the start the discomfort of his position. Almost on his first appearance in the new part he made an attack on the Government, whom he accused of being forced further than they wished to go on the road of anarchy by terror of their followers. He illustrated this by a story of some continental riot. A highly responsible citizen was seen trailing dejectedly in the rear of a disruptable mob. "You here?" exclaimed somebody who recognized him. "Why are you following these deplorable ruffians?" "Alas," was the reply "I must follow them: I am their leader."

But, despite his discouraging start, he quickly showed that in many of the qualities of a leader he was richly endowed. He possessed in an eminent degree the art of rousing enthusiasm; perhaps it would be more correct to say that his own intense earnestness automatically communicated itself to his followers. Speaking in his curious, clipped way, with a rising inflection towards the end of a sentence, now emitting a devastating fire of statistics, now dealing in rattling denunciation, racing along all the time at a speed which made the reporters' gallery a centre of perspiring profanity he would quickly whip up a lethargic Chamber into something very like frenzy.

His memory is quite remarkable, and it was marvellous to see how, in a complicated speech,

replete with figures, he got through merely by consulting now this and now that hastily scribbled memorandum, remembering exactly in which of numerous pockets he had stowed each.

But even at this period the overshadowing personality was present; it was on Sir Edward Carson, and not on the Scottish politician, whom he had "learned to love," that men's eyes were most anxiously fixed during those weary months of Ulsterian anxiety which preceded the war. Neither friends nor enemies thought of Mr. Law as a principal in that drama. But he was publicly lauded and denounced of Irish platforms as a second of no common quality.

Mr. Law's part in those transactions must be left to the verdict of our impartial descendants: the present writer must confess a bias. But those to whom the whole thing is a most unpleasant memory were glad to see the other side of Mr. Bonar Law revealed during the war and since. His conduct throughout was on the highest level of unselfish patriotism; he served two Prime Ministers in neither of whom he once confessed had he much interest with simple and self-effacing loyalty, and his work in every situation was marked with quiet efficiency.

MR. LLOYD GEORGE'S ALTER-EGO.

But here once more the role that best suited him was that of incomparable 'second'. It was not as a Departmental Minister that Mr. Law made his highest reputation though he was a good enough Chancellor of the Exchequer. His best qualities were developed as Mr. Lloyd George's 'alter-ego.'

When the second Coalition Government was formed one of Mr. Lloyd George's chief wants was a Minister—dependable, tactful, and resourceful—on whom to devolve the great burden of Parliamentary management and the disposal of all the immense mass of miscellaneous affairs which ordinarily fall on the shoulders of a Prime Minister. For this position Mr. Law was exactly fitted. As leader of the House of Commons, or rather, as Assistant Prime Minister (for that was really the part he has played during the last four years and more), he has been a most distinguished success.

His Parliamentary manner had greatly improved with experience; he was liked by the House, he had developed a quite remarkable talent for the details of leadership; and his transparent honesty, his complete loyalty to both cause and colleagues indefinitely multiplied the value of his abilities.

Sir W. S. MEYER.

Sir William Meyer, High Commissioner for India, and formerly Indian Finance Minister, died suddenly in London on October 19th. Son of the late Rev. Theodore J. Meyer, he was born on February 13th, 1860, and, at the age of nineteen, on completing his education at University College, London, gained entrance by competition to the Indian Civil Service, in which he had a very distinguished career of nearly forty years' duration. After filling, with credit, numerous responsible posts in the Southern Presidency, he was called in 1898 to the seat of the Supreme Government to be Deputy Secretary in the Finance Department. Three years later he reverted to duty in Madras, and subsequently for about eighteen months was Editor of the monumental *Imperial Gazetteer of India*. Recalled to imperial headquarters, he was Financial Secretary to the Government of India from 1905 to 1909, when he was appointed Chief Secretary to the Government of Madras. He was a member of the Decentralization Committee (1907—09), a delegate to the International Opium Commission at the Hague (1911—12), and a member of Lord Nicholson's Committee on Indian army administration (1912—13.) He became Financial Member of Lord Hardinge's Council in June, 1913, as successor to Sir Guy Fleetwood Wilson. Sir William Meyer's term of office as Finance Minister was marked by unparalleled difficulties and he was subjected to some criticism, particularly in connexion with what the public commission presided over by Lord George

Hamilton called the "lack of provision made for the wants of the Mesopotamia Expedition during the first sixteen months of its operations." Sir W. Meyer, however, claimed, as the then Secretary of State for India, Mr. Austen Chamberlain was authorized to tell the House of Commons that nothing put forward as a military necessity had been refused. Moreover, the Commission recognized that no evidence had been produced to show that any urgent demand made by the military authorities was definitely rejected by the Finance Department.

Sir W. Meyer retired in 1918, and after his return to England took an active part in the organization of Earl Haig's splendid movement on behalf of ex-officers and soldiers. In 1920 he was selected to be the first High Commissioner for India, and as doubtless such a strenuous worker would have desired, has died in harness.

He joined the Royal Society of Arts in 1901 and was a valuable member of the Indian Section Committee. The able paper he contributed to the Society in 1920 on "The Indian Currency System and its Developments" was described by one of the experts who spoke on the occasion as a classic on the subject and likely to be of great historical importance. More recently Sir William occupied the chair when Mr. Alexander Howard's paper on "The Timbers of India and Burma" was read.

He translated into English M. Chailley's "L'Inde Britannique," also revising the French text.

A Madras Government Press Communique, dated Fort St. George, the 17th July 1922, says:—With a view to check the practice of adulterating castor oil before export the Government in their Press Communique, dated 20th December 1919, provided as an experimental measure certain facilities for the examination of the oil by directing the Chemical Examiner to test free of charge such oil as is sent to him by firms and individuals approved by the Director of Industries and to grant in each case a certificate showing the standard of purity attained. In their Press Communique, dated 31st May 1920, the Government extended the facilities to coconut oil also. The Director of Industries now reports that only eight samples were received by the Chemical Examiner during the two years the scheme has been in force and that this shows that the trade does not require certificates of purity. He accordingly re-

commends that the concession may be withdrawn, the usual fees being levied in future for any analyses done. The Government accept the proposal.

Owing to the present financial condition of the Colony, the Government of Trinidad has decided that it would not be wise to ask the Legislature to vote £5,000 to take part in the Empire Exhibition in 1924. The matter will, however, be reconsidered if there is an improvement of the finances next year.

A representative committee has been appointed to advise the Trinidad Government as to the desirability of establishing an agricultural bank and, if practicable, to deal with the constitution, administration and financing of such an institution as well as the extent of its operations.

Mysore Economic Development Board.

PROGRESS REPORTS.

BOARD OF EDUCATION.

The following is a summary of the proceedings of the Fourteenth Meeting of the Board of Education held at 3-30 P.M., on Wednesday, the 23rd August 1922, in the Vice-Chancellor's Room, Central College, Bangalore, with Dr. Brajendranath Seal, M.A., Ph.D., D.Sc. (*Chairman*), in the chair:—

After welcoming the members of the Board, the Chairman proposed that the Board do place on record their appreciation of the valuable services rendered by Mr. T. G. Rama Iyer, B.A., as Secretary to the Board.

Resolution I.—Resolved *unanimously* that the thanks of the Board be conveyed to Mr. T. G. Rama Iyer, for his valuable services as Secretary to the Board of Education.

Then the Chairman drew the attention of the Board to the recent Government Order No. 770-829—E. C. 4-22-1, dated 31st July 1922, on the subject of the re-organization of the Central Boards and observed that the main points to note therein were (1) that the provision in the budget for the Economic Conference had been cut down from 80 to 50 thousand rupees, (2) that a sum of Rs. 15,000 had been provided for 'Experiments' and another sum of Rs. 10,000 for 'Travelling Allowances' which included those for the meetings of the Central Boards, Economic Development Board and the Annual Meeting of the Economic Conference.

The said Government Order was recorded. Copies of the list of Government Orders were placed on the table and no remarks or suggestions were made by any member.

2. *Sub-Committees to work out the Programme for 1922-23.*—The subjects were divided into six main groups—each of which was entrusted to a Sub-Committee for investigation and report.

3. *Teachers' Studentships.*—Read letter No. 4208—Edn. 275-21, dated 11th May 1922, from the Chief Secretary to Government, forwarding copy of letter No. H. C. 455, dated 27th March 1922, from the Inspector-General of Education *anent* the institution of Teachers' studentships, etc., and requesting that, in the light of the above, the matter may be re-

considered by the Board and their views communicated to Government.

The Chairman observed that the scheme was in the nature of continuation study, and that four deputations might be permitted:—three for Science to the Central College, *viz.* one for Physics, one for Chemistry and one for Botany or Zoology or Mathematics for working under the directions of the Professors; and the fourth for Arts, to the Maharaja's College for History, Economics or English for working likewise under the directions of the Professors. The main work in the last case would consist in writing theses on topics connected with teaching in schools. The Professors should send progress reports on the deputies once in six months and the theses on Arts subjects should be submitted to the University for opinion. The selection of the teachers for deputation should be made by the Inspector-General of Education.

Resolution II (a).—Resolved that the recommendations of the Inspector-General of Education be approved with the modification suggested by the Chairman that the four deputations be as follows:—

1 for Physics, 1 for Chemistry, 1 for Botany, or Zoology or Mathematics and 1 for History, Economics or English for the term of one full academical year, subject to the provision regarding periodical progress reports.

Resolution II (b).—It was further resolved that Government be requested to make a provision of Rs. 3,600 in the budget of the Department to meet the cost.

4. *Women's Secondary Grade Final Examination.*—Read correspondence from the Inspector-General of Education and the Registrar of the Mysore University, regarding the institution of the Women's Secondary Grade Final Examination in Mysore as introduced by the Madras Government.

The Chairman observed that there was no need for such an examination here as the Mysore S.S.L.C. scheme provides optional subjects suited to women's requirements and tastes, *e. g.*, music, needle work, dress-making, lace work, and domestic economy which latter

might be split up into domestic hygiene and child welfare. Permission may be given to girls to appear as private candidates.

Mr. Balasundaram Iyer said that he had no objection to allow girls to appear for the examination as private candidates.

Resolution III.—Resolved that a recommendation be made that girls be allowed to appear for the S.S.L.C. Examination as private candidates.

5. Term Promotions.—Read Proceedings of the Sub-Committee which met on 26th April 1922 to consider the subject of 'Term Promotions.' (Appendix C.)

The Chairman said that this system was in force in England and America, and that the idea was to separate brighter boys from the duller ones, and to suit the teaching to the capacities of each section, so that the injurious effects of retardation might be avoided.

Mr. Subbaiya suggested that double promotions might be introduced. But as this was, however, considered a different question altogether, the suggestion was dropped.

The Chairman remarked that in Indian Educational organizations, one of the chief desiderata was a power of initiative and a spirit of experiment for the purpose of educational development. This was a *sine qua non* of educational progress. Certain experiments ought to be made in particular centres under favourable conditions. This principle might be applied to Term Promotions. They might be started as an experimental measure in one or two centres under the Education Department and if this is found to work satisfactorily, the scheme might be extended to other centres.

Resolution IV.—Resolved that the scheme of 'Term Promotions' be recommended to be tried in certain schools in the Lower Forms.

6. Free Study Periods.—Read Proceedings of the Miscellaneous Subjects Sub-Committee which met on 15th July 1922 to consider the subject of Free Study Periods. (Appendix D.)

The Chairman observed that the Dalton Plan made all study at school a sort of 'Free Study' but that it was somewhat too costly in view of the existing equipment of teachers, teaching appliances and class accommodation in the schools in Mysore.

Resolution V.—Resolved that the report of the Sub-Committee that the system of free study periods might be tried, as an experiment in the Training College be accepted.

7. Grant-in-aid Rules re Public Libraries.—Read letter No. 4962—Edn. 12—19—71, dated 9th December 1919, from the Chief Secretary

to Government forwarding for the opinion of the Education Committee (now Board) a draft of grant-in-aid rules for Public Libraries proposed by the Inspector-General of Education.

In accordance with the decision of the Board at their meeting held on 7th May 1921, a revised set of rules was prepared and copies thereof were circulated among the members previous to the meeting.

Resolution VI.—Resolved that the revised rules be approved with the slight alterations indicated in Rule XIV which should run as below :—

"XIV. State-aided Libraries which are supported by public subscriptions shall be deemed to be the property of the Municipality as trustee for the Public, and the Local Municipality shall exercise the right of interference in case of serious default or mismanagement, on the report of the Inspector-General of Education."

8. Backward Classes Scholarships.—Read Letter No. E. 311—Edn. 141-21-34, dated 12th July 1922, from the Chief Secretary to Government, forwarding copy of letter No. H.C. 332, dated 29th May 1922, from the Inspector-General of Education, regarding certain changes in the notification relating to the administration of backward classes scholarships and requesting that the Board of Education may be consulted as regards the change in the scheme proposed by the Inspector-General of Education, and communicate to Government their opinion in the matter.

Mr. Subbaiya was against effecting any retrenchments in the backward classes scholarships. He explained the difficulties to which the boys were subjected for want of adequate scholarships, and suggested that the vernacular scholarships may be abolished and the savings effected awarded as backward and depressed classes scholarships, thus increasing the tenure of scholarships to ten months as before.

Mr. Kalami agreed with Mr. Subbaiya that no reduction should be effected in these scholarships.

Resolution VII.—Resolved that the changes proposed by the Inspector-General of Education be approved, with the remark that the full grant of one lakh of rupees, earmarked for backward classes scholarships in question, be restored, as soon as circumstances permit.

In this connection Mr. Subbaiya objected to the present practice of utilizing the lapses in University scholarships allotted to particular communities for the benefit of University

students of other communities. He wanted such scholarships to be utilized for the same community in the lower grade.

Mr. Balasundaram Iyer explained that, in order to get round figures, certain communities are grouped. If there be any lapses, they must go to the other communities in the same group.

Mr. Chandy thought it would be better to award the lapsing scholarships to communities in the order of illiteracy.

After a long discussion, the Chairman proposed that it should be provided in the rules that the lapses in one grade may be transferred to the same community in the lower grade in any district, the present restriction or such transfer being withdrawn. This would obviate the necessity of creating fresh divisions among the people by artificial groupings of communities. Finally, those scholarships that should remain undisbursed even after allowing transfer to other districts may be given to other communities in the order of their illiteracy, or may lapse to Government.

The Board accepted the Chairman's suggestion regarding the withdrawal of the existing restriction on the transfer to other districts.

Mr. Subbaiya's proposal for the abolition of the IV grade scholarships was not accepted by the Board.

9. *Moral and Religious Instruction*.—Read proceedings of the Sub-Committee which met on 8th July 1922 to consider the subject 'Moral and Religious Instruction.' (Appendix E.)

Mr. Subbaiya thought that religious instruction in High Schools was unnecessary.

The Chairman remarked that so long as dogmas and creeds were not taught, they might have it in High Schools also. Extracts from Puranas, Scriptures, etc., were intended as aids to the cultivation of the religious and moral sentiments and their educational value from this point of view has been recognized even by agnostics like Huxley. The training of the emotions and the formation of right habits are the most important part of education in the plastic years of life, and the great historic cults and religious traditions cannot be replaced by any of their modern substitutes for the sovereign ends of a social education.

Resolution VIII.—Resolved that Resolutions Nos. I and II of the Sub-Committee be adopted.

N.B.—The number of members to serve on the Committee appointed for the revision of the *Nithi Chintamani* and the compilation of extracts referred to in Resolution II (c) was increased by two, viz., Messrs. R. Narasimha-char and B. Puttaiya.

Re. Civic and Moral Instruction, the question should be considered on receipt of Mr. Wadia's book from the Inspector-General of Education.

10. *Curricula of Studies for Girls' Schools*.—Read Proceedings of the Women's Education Sub-Committee which met on 23rd July 1922 to consider the question of the revision of curricula of Studies in the Primary Kannada and Middle Schools. (Appendix F.)

The Chairman suggested that 'Domestic Economy' and 'Hygiene' may be combined in the lower stages so as to form a single subject.

Resolution IX.—Resolved that the recommendations of the Sub-Committee be approved.

11. *Hostels and Scholarships*.—Read Notes on Hostels and Scholarships from Mr. M. Subbaiya, B.A., Member of the Board of Education. (Appendix G.)

Resolution X.—Resolved that the question be referred to the Inspector-General of Education for report as to the condition of the Hostels.

Mysore, 9th September 1922.

B. N. SEAL,

Chairman.

V. SUBRAHMANYA IYER,
Secretary.

Board of Agriculture.

The following is a summary of the proceedings of the meeting of the Board of Agriculture held in the Chamber of the Second Member of Council on Monday, the 16th October 1922, at 3 p.m., with Mr. Mir Humza Hussain, B.A., B.L., Second Member of Council (Chairman) in the Chair:—

The Chairman enquired of the Director of Agriculture whether any steps were being taken for the investigation of the coffee disease which is reported to be playing a great havoc in some of the estates in the Kadur District.

Dr. Coleman explained that the Department were aware of its existence and had sent an expert to investigate the nature of the disease on the spot, but that his efforts were not attended with any success.

The Chairman requested the Director to bestow special attention on this disease and try and find out a remedy before the disease became general and played much havoc in the estates.

I. *Correspondence relating to the propagation of good varieties of Pine-apple in the State*.

After discussion it was resolved by the Board to leave the whole question to the District Boards with the observation that any specific proposals made by any of the District Boards in the matter of the propagation of good

varieties of pine-apple may be considered by the Agricultural Board. It was also *resolved* that intending growers may communicate with the Superintendent, Government Gardens, who will afford necessary help to them.

II. *Correspondence relating to the opening of a temporary fruit plant depot at Kadur.*

The Superintendent, Government Gardens, explained the previous history of the case and observed that there was not much use in starting temporary fruit depots on the lines suggested by the Kadur District Board. What was required was the starting of proper nurseries at District Headquarters with a view to enable intending growers to obtain plants readily. He was willing to supply plants required and had made necessary enquiries of the Deputy Commissioners whether they would be willing to take the responsibility of collecting the cost of plants. But none of them had come forward to undertake the work. The chief difficulty lay therefore in the lack of proper agency for the distribution of plants among the growers.

After full discussion the following resolutions were arrived at:—(1) that the Superintendent, Government Gardens, be requested to furnish a scheme for the starting of a central nursery at Bangalore; (2) that the distribution of plants in the Districts be attended to by the Agricultural Inspectors who will have to undergo a course of training in Horticulture, and, (3) that the opening of the fruit plant depot at Kadur may be given up for the present.

III. *Correspondence relating to the consolidation of scattered holdings.*

The Chairman read the correspondence on the subject and the latest decision of the Madras Government in the matter stating that the scheme of consolidation of holdings by mutual consent during resettlement may be dropped as it was not a practical proposition so far as the Madras Presidency was concerned.

Mr. N. Rama Rao observed that the subject was a very important one and should be thoroughly investigated by the Board.

Dr. Coleman observed that he was of opinion that, if agriculture was to progress in India, consolidation of holdings was a vital necessity. He said that, while consolidation had been a success in Foreign countries, it was not clear why it should not succeed in Mysore. As a result of consolidation of scattered holdings, the production in Japan had increased by 28 per cent. It was not desirable in the absence of local information to determine the practicability or the impracticability of the scheme,

by the success or failure of the scheme in other parts.

Mr. N. Rama Rao said that the scheme may be tried in some selected typical villages situated under favourable conditions or at least preliminary investigations may be carried out to find out whether the scheme should be introduced and if so what difficulties have to be overcome.

Mr. N. Krishniengar observed that the ryots are conscious of the disadvantages of minute fragmentation of holdings and said that in some villages the ryots had readjusted their holdings of their own accord and that he was not sceptical as to the success of the scheme if introduced in right earnest.

Messrs. P. A. Gosayee and H. Krishna Sastry thought that the scheme was not a practical one and it was very difficult to bring it into operation.

At this stage the Chairman observed that he would study the subject in greater detail and that the consideration of the subject may be deferred for the next meeting.

IV. *Question of granting concessions for starting private Fruit Nurseries.*

Deferred pending formulation of a scheme for the starting of a Central Nursery at Bangalore (*vide* No. II).

V (a). *Recommendation of the Indian Sugar Committee about carrying out of the Installation of Power Pumping Plants either by or in close consultation with the Agricultural Department.*

(b) *Mr. N. Rama Rao's proposition regarding the transfer of the installation of the pumping plants in respect of sugar-cane from the Industries and Commerce Department to the Agricultural Department.*

Mr. R. Gopalaswami Iyer thought that the Agricultural Department was the best agency for installing pumping plants.

Mr. H. Krishna Sastry said that of a score of plants installed by the Industries and Commerce Department, not one was working satisfactorily.

The Chairman observed that the Industries and Commerce Department had its own workshop to execute repairs to the plants and he was therefore doubtful whether the Agricultural Department had the requisite agency to carry on the work satisfactorily.

Mr. N. Rama Rao emphasized that lifting of water was not the most important factor of the proposition. Whether the spot was best fitted for the location of the plant, whether the condition of the soil was such as to facilitate the growth of valuable crops to make the

installation a remunerative one are all factors which have to be settled before the installation of the plant could be effected. This could only be done by the Agricultural Department.

Dr. Coleman in supporting Mr. N. Rama Rao said that, in all other countries, the work of installing pumping plants was under the control of the Engineering Section of the Agricultural Department. The preliminary investigations as to the suitability of the place for the installation of the pumping plants should at least be conducted by the Agricultural Department.

Mr. P. A. Gosayee suggested that the location of the plant might be done by the Agricultural Department while the erection of the plant may be conducted by the Industries and Commerce Department.

It was resolved that, before the plant is installed by the Industries and Commerce Department, a certificate as to the suitability of the place for such an installation and the crops to be grown should be obtained from the Agricultural Department.

VI. *Improvement of Gomal lands.*

Deferred.

VII. *Proposal of the Registrar of Co-operative Societies re sale of Agricultural Implements, seeds, etc., to Co-operative Societies at concession rates.*

Mr. K. H. Ramiah explained the lines on which concessions could be shown to the Co-operative Societies by the Agricultural Department in the matter of the supply of Agricultural implements and seeds.

Dr. Coleman observed that implements were at present being supplied to the ryots at cost price and that he was not therefore in a position to show concession to the Co-operative Societies unless the price for retail sale to the ryots was enhanced. In view of the steady increase in the price of these improved ploughs he did not consider it desirable to increase it still further. The Director suggested that if the Registrar of Co-operative Societies had consulted him previously, he would have come to a definite understanding with him as to the lines on which concessions could be shown to the Co-operative Societies in the matter of selling seeds and manures.

It was resolved that the question may be discussed by the Registrar of Co-operative Societies with the Director of Agriculture and proposals formulated for the consideration of the Board at the next meeting.

VIII. *Letter No. L 2264 dated 5th September 1922 from the Revenue Secretary to the Govern-*

ment, forwarding for the views of the Board, the proposals of the Director of Agriculture for the levy of an inoculation fee of eight annas per head of cattle inoculated.

After discussion it was resolved that a fee of 6 annas be levied on each cattle inoculated.

IX. *Correspondence ending with letter No. ROC. 119—HC. 146-7 dated 7th September 1922 from the Director of Agriculture about the inspection of large landed estates by him with a view to the suggestion of modifications if necessary of the Rules for the grant of such estates.*

Deferred.

X. *Recommendations of the Sericultural Sub-Committee dated 10th March 1922 and the views of the Revenue Commissioner thereon.*

Deferred.

MIR HUMZA HUSSAIN,
Chairman.
J. APPAJI GOWDA,
Secretary.

Bangalore,
26th October 1922.

The area sown with indigo in the Madras Presidency up to the end of August 1922 is estimated at 102,600 acres as against 114,500 acres last year a decrease of about 10 per cent. The area in Cuddapah has increased by 50 per cent owing to good rains in June. There has been a decrease in all the other main tracts owing to want of good sowing rains and to the gradual decline in exports, as a result of the increasing competition of synthetic dyes. The price of indigo between December and March was less than in the corresponding period of last year. The crop suffered from drought in most places and yields below normal are reported. There is no reliable information as to the percentage of the crop actually manufactured into dye. But if the whole crop were manufactured into dye, the possible yield would be about 1,150 tons.

Major Belcher, head of the British Empire delegation, before leaving for New Zealand, uttered a note of warning to Australian exporters. It would be fatal to Australian business enterprise, he said, if the British Empire Exhibition should create a demand for goods which could not be satisfied. There must be an adequate supply on hand from which orders could be executed. He was quite sure that, if the opportunity of the exhibition were taken to conduct a publicity campaign throughout Great Britain for Australian wines, dried fruits, and canned fruits, an enormous demand would come from wholesale buyers and retail distributors.



Books in Brief.

SHORT REVIEWS OF RECENT BOOKS.



Child Training through Kindergarten Methods.

By Mrs. W. J. Longley, C. L. S. for India, Madras. Price Five annas.

Teachers cannot do worse than invest a few annas on the purchase of this excellent and informative booklet. The author is a practical teacher and the manner in which she sets out the principles of child psychology show how much and how well she knows her rural children. We wholly commend her production and should be altogether sorry if it does not reach those for whom it has been specially written. This is eminently a book that should be in the hands of every one who wants to be a good and successful teacher.

Wheat Costings, 1914 and 1919—1922.

By H. Grange, P. S. King & Son, Ltd., London. Price 1s. 6d.

This pamphlet shows the cost of wheat production in each year and a method of ascertaining the cost of corn in any year. One of the objects of the writer is to solicit any practical suggestions as to how corn growing may become self-supporting. The unfortunate position of the corn-growers is best exhibited in a booklet of this kind. Mr. Grange's figures show how hard the agricultural employer has been hit by the withdrawing of the guarantees promised under Agriculture Act of 1920. The booklet ought to be an eye-opener to the Agricultural Department in England.

The Future of Indian Politics.

By Annie Besant, D.L., P.T.S., The Theosophical Publishing House, Adyar, Madras. Price Rs. 3—8—0.

This book is for Indian publicists. It is a topical publication dealing with the Indian political movement towards freedom. The view propounded in it is one that will be hotly contested in some quarters; in others it will be warmly approved. The author would be glad, we think, if her plan were considered on its merits. She wants India "as an organ in the larger body"—the Indo-British Commonwealth. We have no doubt that the book will be widely read in and out of this country. It is written in Mrs. Besant's plain-spoken manner.

Money, Banking and Exchange in India.

By H. Stanley Jevons, Professor of Economics in the University of Allahabad, Superintendent, Government Central Press, Simla. Price Rs. 2—8—0.

This is a book on the most difficult topics in Economics dealt with in a popular style. Professor Jevons has done his work with the care and precision that might be expected from him. The whole book from cover to cover is most readable, despite the nature of its contents. The book has been, we see, priced specially low at the direction of the Government of India, in order to popularize its contents. That is a piece of Educative propaganda on which we can justly congratulate the Government of India. The book ought to command a rapid sale all over India.

The Wealth and Welfare of the Punjab.

By H. Calvert, B.Sc., I.C.S., Registrar, Co-operative Societies, Punjab. "Civil and Military Gazette" Press, Lahore.

Mr. Calvert who has already established his reputation as an authority on Co-operation deserves high praise for bringing out this volume. It is devoted to a series of studies in Punjab Rural Economics. Almost every economic aspect of Punjab is considered in this book with a knowledge and precision that should make it easily the leading book on it for years to come. We have said enough, we think, on the comprehensive character of Mr. Calvert's work. All the same, we would specially invite the attention of readers to the last four chapters of Mr. Calvert's volume. They are devoted to "Agriculture and Industries," "the Place of Co-operation in a Modern State," "The Economics of Punjab Poverty", and a "Protection or Free Trade." The author disarms criticism when starts his preface with the words: "It will be easy to criticise this book." We do not propose to attempt the critic's work for obvious reasons. It is enough to state that the attempt at criticism would be altogether futile when the work is of the nature of Mr. Calvert's book. It is the duty, we think, of the would-be critic of a work of this character to study and understand it first

and then ponder its contents. That would be work enough for him. We do not mean that helpful criticism would be out of place, but we do suggest that criticism of the captious kind would be hardly worth consideration. We would propose the addition of this book to the Library of every College, University and Co-operative Department in India.

Albert Ballin.

By Bernhard Huldermann (translated from the German by W. J. Eggers, M. A., (London), with portrait and notes in facsimile by the Kaiser, the House of Cassell. Price 12s. net.

One of the most noteworthy volumes of biography this season is undoubtedly the life-story of Albert Ballin, the creator of Germany's Mercantile Marine and the confidant of William II. The book is written by Bernhard Huldermann, who—for ten years the business colleague of Ballin—was asked by Ballin to take charge of his business and private papers. Ballin died on the eve of the armistice, after a life of constant and strenuous effort to forward shipping interests and to act as adviser to the Kaiser and intermediary for him in numberless delicate missions affecting the peace of Europe. For a decade before the War, and also during the War, he was the confidential medium for tentative proposals of high import between our Cabinet, our King, and the German high officials and Kaiser.

Starting off with details of his rise to power in the shipping world as controller of the Hamberg-Amerika line, and the prime agent in every progress and plan of German shipping, the record devotes more than half of its pages to Albert Ballin's political activities, his intimate relations with William II., and his conduct during the War. It is a remarkable series of revelations emphasized by private documents and Royal correspondence, including notes in facsimile by the Kaiser expressing his criticisms of British policy and opinions. In the course of the recital we learn the inwardness of Lord Haldane's mission to Germany and how, on the eve of success, it was frustrated. Also we are told much of Winston Churchill's efforts at *rapprochement* on Naval matters, and a great deal about British pre-war policy, while we receive some astounding enlightenment upon the condition of war-time Germany. During the War Ballin struggled to apply his common sense to the mendacity and incapacity with which the Kaiser was surrounded, and some of his personal interviews with William II, make thrilling reading.

It is bare truth to say that this book is one of the most enlightening and convincing documents of post-war days.

The "New Bookshelf."

Messrs. Thacker Spink & Co. of Calcutta and Simla, who have completed their first century of bookselling and publishing in India are still progressive. Their monthly publication, "The Bookshelf" has been offering in a new and improved series since August last. "The Bookshelf" is distributed free to book-buyers in consideration of orders anticipated. It is an attractive list of books old and new and would do credit to any one of the largest firms in Europe or America. Messrs. Thacker Spink & Co. have also commenced to issue a new series of handy catalogues in which they aim to list books in all subjects in every class of literature. Those now ready include Electricity, Politics and Economics, Banking and Finance, Co-operation and Co-operative Banks, Biography, History, Theology, and Travel, while those to appear very shortly will include every branch of Engineering, Industrial Manufacture and Physical Science, as well as books on the Theory and Practice of Commerce and Commercial subjects generally. Other catalogues are promised in due course. We have no doubt that an increasing number will continue to order from "Thacker's" and thus enable them to render their service more effective than ever.

Speaking at the annual dinner of the Queensland Chamber of Manufactures, the President, Mr. A. Watson, warned those present that they could not expect to build up the nation by erecting a brick (high tariff) wall around Australia. "We must barter in the world's markets," he said, "and produce goods at such a cost as shall enable us to compete with outsiders."

The German Government is permitting the import of 20,000 tons of Chile saltpetre on condition that 50 per cent is supplied to agricultural societies and 50 per cent to the fertilizer trade. The Chilian Government threatened to prohibit the import of German goods unless Germany removed the restriction on saltpetre. Less than 30,000 tons of saltpetre were imported from Chile in 1920, against more than 770,000 tons in 1913. German exports to Chile are growing, especially electrical appliances and paper goods, which have already reached pre-war dimensions.

